THE DENTAL DIGEST

MARCH~1921

VOL. XXVII, NO. 3

EDITED BY
GEORGE WOOD CLAPP, D.D.S.

PUBLISHED BY
THE DENTISTS' SUPPLY CO.
CANDLER BLDG., TIMES SQUARE
220 WEST 42ND ST., NEW YORK

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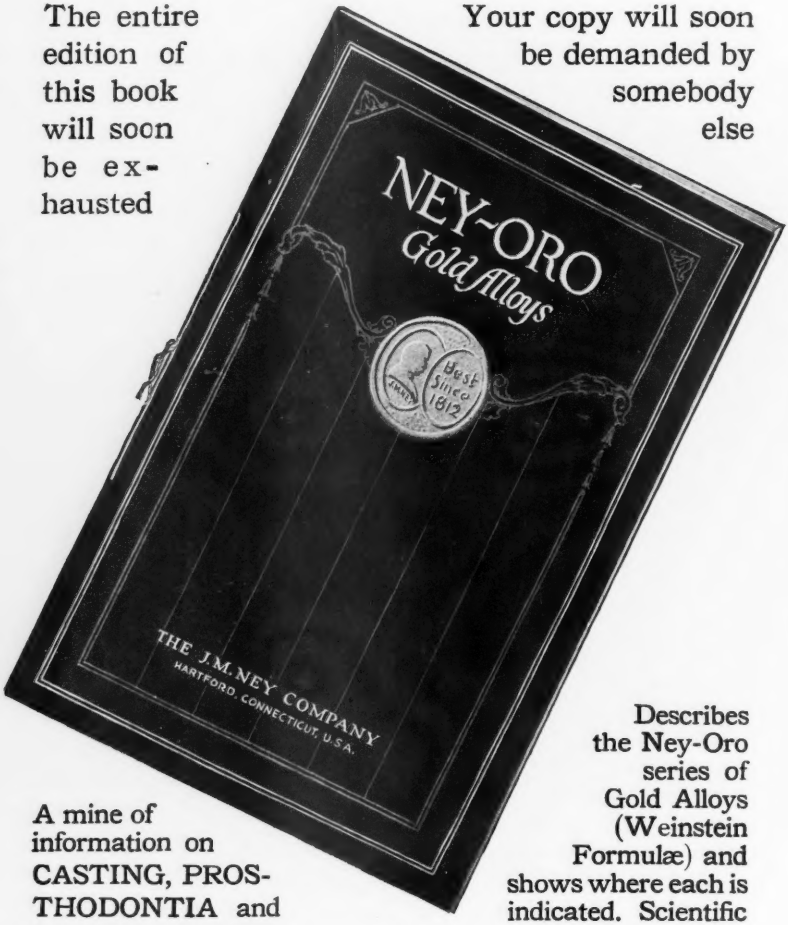

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THE DENTAL DIGEST

Vol. XXVII MARCH, 1921 No. 3

Observations on Anchored Dentures

By I. J. Dresch, Toledo, Ohio

We learn wisdom from failure much more than from success. We often discover what will do by finding out what will not do; and probably he who never made a mistake never made a discovery. —Samuel Smiles.

IT was during the 1920 Meeting of the National Dental Association, at Boston. A group of dentists weary from a hard day of clinics and lectures had boarded a sight-seeing bus, and were enjoying the cool of the evening, while viewing the sights of the city. There were five in the party—a prominent Specialist in Dental Surgery from New York, a Periodontist from Ohio, and three general practitioners, two from San Francisco and one from Illinois.

They were in the midst of a discussion relating to a very scientific paper that they had heard that day, when the machine made an abrupt stop. The bus had stopped near the end of a narrow street, and before a shabby weather-beaten house. The guide informed them that in 1776 it was the home of the village blacksmith and dentist, but who in this day was better known as an American Patriot. It was the home of Paul Revere.

No wonder that they paused before this Shrine of Liberty to ponder at the wondrous changes the hand of time has wrought since the blacksmith-dentist made his famous ride. From a quiet village in a New World Colony to a famous city of the greatest nation the world has ever known; such is the history and progress of Boston, of America. From the blacksmith's hammer, awl and tongs to the Specialist in Dental Surgery and Periodontia; such is the history and progress of Dentistry.

Since the day that Paul Revere with his blacksmith's awl, shaped from crude blocks of ivory the objects of his art, dentistry from an obscure trade has become a great profession. Although now divided into many branches, *the great function of dentistry has always been restorative*—to restore with artificial substitutes the natural teeth that have been lost. In Paul Revere's time these restorations were, in the main, intended only for esthetic effect—to fill the void. Today, however, good dentistry demands restorations that are more than ornaments. This age expects dental restorations to be efficient in mastication, com-

fortable to wear, and permanent in character, as well as pleasing to the eye.

Have we come to expect such ideal restorations overnight? Has the wonderful progress of dentistry been the result of a few months, or a few years, of effort? Perish the thought. The great position of dentistry today is the result of the labors of those who have "gone before"—those whose life's work have been stepping-stones to progress. We of today build upon the foundation laid yesterday; with eyes front, we face the future, confident of our trust.

The Ideal Restoration

By gradual degrees, slowly but ever surely, the march of progress goes onward toward the ideal of perfection. In the making of Anchored Restorations progress has been marked by gradual elimination and addition.

The first restoration that could be styled as being anchored, came with the advent of the gold crown. The anchorage was secured by soldering a square tube to the crown. A square metal bar which snugly fitted the tube was also fastened to the denture. The relations of the bar and tube were such that when the denture was placed in the mouth the bar would fit into the tube. Thus the tube soldered to the gold crown, held the restoration rigidly in place.

But the ideal was not yet reached, unforeseen difficulties arose. It was usually necessary to use a bar and tube-retaining device on two different teeth, one on each side of the jaw. This made it necessary to have the tubes absolutely parallel with each other. Even with modern equipment we find this a difficult task on account of the instability of the materials with which we must work. It is not surprising, then, that the pioneer in anchored work had failure as well as success.

Another factor that helped eliminate the bar and tube retainer was the early destruction of the abutment tooth. The bar and tube made such a rigid connection between the denture and the gold crown cemented on the abutment tooth, that in effect the crown was part of the restoration. So when the force of mastication was applied the restoration acted as a lever on the abutment. And this constant leverage or strain sooner or later either destroyed the abutment outright, or caused such soreness as prohibited the comfortable wearing of the denture.

While a failure, the first retainer or attachment stands at the same time as the foundation upon which more modern retainers were designed. The reader is probably aware of the various attachments patterned after it. Foremost among which to the present day, is the Roach ball and tube attachment, invented by Dr. F. E. Roach, of Chicago. The Roach attachment answered the objections brought against the

original retainer by a simple yet effective mechanical principle. In effect the Roach attachment acts as a ball and socket. This automatically eliminates the necessity of paralleling, the ball having a perpendicular and horizontal range of movement, within the tube, the denture sinks into the tissue under masticating forces without undue strain on the abutment.

While one branch of the dental profession was thus engaged in perfecting the ideal anchored restoration, another branch was working with the X-ray. Still another branch was investigating the relation of focal infection to systemic disease. The X-ray group got in the habit of peering under perfectly good looking gold crowns and to our dismay discovered them harboring all manner of trouble. Then almost before we knew what they were up to, the focal infection crowd (especially the M.D.'s) began to charge our beautifully-made and polished gold crown with all the diseases that man is heir to.

Of course, we of the prosthetic branch knew that these others had gone to extremes. We knew of many crowns that had been in the mouth for years and years and were still good. Even the X-ray couldn't find any fault with these crowns. *But we were in a dilemma*—it was proven beyond question that a great number of our crowns were failures. Of two crowns of apparently similar construction and application, one would be good, the other bad. The question arose, Shall we take a chance that this crown will be a good crown? Dare we, as professional men, gamble with the patient's health?

What were we to do in the case of Mrs. Smith, for whom we had made an anchored denture? Her physician had been treating her for some time for a complication of trouble, without apparent effect. Finally the physician suggested an X-ray of the crowned teeth. The pictures condemned the crowns and the abutments were extracted. After extraction we were called upon to make another restoration, one which would supply the missing teeth. The question then presented, Shall we crown the abutments as before? Shall we repeat again that which proved a failure? But we were not long in doubt, the patient answered the question. She had been educated to abhor a crown.

While a great many of us still believe that a *properly made* crown is safe, at the same time we all agree that it is not a desired ornament by any means. So it is quite natural that the gold crown is being gradually eliminated. While batteries of X-rays were shelling the gold crown position, the besieged were preparing a last line of defense. Thus the gold inlay began to take the place of the crown. We soon found that a small inlay caused as much trouble as the gold crown. We learned that an inlay abutment was satisfactory only when enough tooth area was covered to give firm retention to the inlay. We found that large com-

plicated cavities were essential to the success of the inlay. This entailed the mutilation of healthy teeth, the very thing we desired to get away from. So, then, just how much better than the gold crown is the gold inlay?

It has been said that each crisis brings its word and deed. Surely this old quotation may be applied to the introduction of the cast clasp, which came at a critical time, just when the battle for and against the gold crown began in earnest. To Norman B. Nesbett, D.M.D., of Boston, we are indebted for the invention of the cast clasp. Unlike many inventors, Dr. Nesbett was not quick to present his idea. He patiently experimented and made tests that covered a period of two years. When Dr. Nesbett gave his cast clasp invention to the profession, he also gave a definite and scientific technic for its construction. A simple thing to construct, and with the detail already worked out for us, the demand for something to replace the gold crown made the cast clasp immediately popular.

It is now five years since Dr. Nesbett gave us the cast clasp. Thousands have been used by thousands of dentists. We have had time to study and reflect, and many cases to observe. We have learned where the cast clasp is best and where it is poorest. And in our studies we have come to realize the thought so ably expressed by Dr. Otto U. King, "Orthodoxy in science is not yet."

Let us examine the cast clasp. It is made of a platinum-gold alloy, which gives it great strength. It is made to fit over the crown, or bulge, of the tooth as snugly as a glove on a lady's hand. It snaps to place over the bulge of the tooth like a band of spring steel. When in place it requires considerable force to dislodge it. Where two are used to form the anchorage of a one or two-tooth bridge, they present the greatest attainment in bridge work. Without the mutilation of a tooth we have a bridge that is as stable as one with gold crowns, and in addition the bridge is removable.

In connection with anchored restorations, those which have extension saddles, the cast clasp retains as effectively as the original square tube and bar retainer. Being practically immovably attached to the abutment tooth, the cast clasp will stand a tremendous force without losing its grip on the tooth. Forty years' progress has given us an attachment that without the use of a gold crown, will retain as effectively as the old square tube and bar. *But the cast clasp has not changed the deadly effect of leverage on abutment teeth. Connected as rigidly with the abutment as was the square tube and bar, the cast clasp applies the same leverage.*

Sometimes a period of two years or more will elapse before the effect of leverage will be apparent in the abutment tooth, according to Dr. G. Walter Dittmar, Professor of Prosthetic Dentistry, University of

Illinois. In more cases, of course, the abutments become so sensitive that the restoration is removed before other signs of trouble appear. As this leverage is caused by the free end of the saddle sinking into the tissue every time the jaws close in mastication, the continual effect is the same as that of traumatic occlusion. Dr. Paul R. Stillman, of New York City, in an address before the National Dental Association, in 1918, said: "Analysis of cases indicates that trauma is manifested in three ways as regards the application of force to the tooth. By elongation; *through tipping, whereby force is applied at an abnormal angle to the long axis of the tooth, etc.* . . . . . ."

The Deadly Effect of Leverage on Abutment Teeth

Traumatic Occlusion when stripped bare of confusing technical or dental terms, is defined as an *abnormal force applied to the tooth.* As Dr. Stillman says, "One of the three prime causes of trauma is the tipping force applied at an abnormal angle." In his definition, however, Dr. Stillman had in mind the force that would be applied by an opposing tooth, one on the opposing jaw. In other words, a prime cause of trauma is the force of one tooth applied *abnormally to an opposing tooth.*

The American Academy of Periodontology, through its Committee on Scientific Research in a duly adopted statement says, among other things, that "Traumatic stress may be acquired in removable bridgework (anchored dentures) when abnormal stress is brought to bear on the abutments." Speaking of this *force* or *trauma,* Dr. Arthur Merritt, of New York City, in a paper before The National Dental Association at New Orleans, said in part: "It will cause injury to the entire pericementum, and if long enough continued, to the alveolar process also." Or to quote again from Dr. Stillman: "When undue stress is produced and the tooth is over functioned, pyorrhea may result, and the extent of the disease will be in proportion to the abnormal stress placed upon the tooth."

We have seen that trauma is the result of the force of *one tooth* abnormally exerted upon another tooth. Consider then, the danger of trauma when the force of several teeth is abnormally applied to one tooth. Now consider the further danger when that force is multiplied by the energy created by the leverage of the restoration which carries several teeth. When you change an auto tire you don't attempt to lift the car by brute strength—you use a jack, you take advantage of leverage. In all probability you couldn't lift the car by bodily strength if you wanted to; but given the leverage of a jack, a school girl could lift the car with one hand. With one end of the restoration firmly connected to the abutment tooth, the denture becomes a lever of the first class, when the free end sinks into the tissue under the force of mastication.

A *tremendous force is applied to the abutment from ordinary mastication,* because of the same law of leverage which allows a child to lift an auto that weighs three thousand pounds.

We are beginning to learn why the old square tube and bar were unsuccessful. We shall soon know why the cast clasp, that exerts the same force, is also unsuccessful; then when we fully understand the cause of the trouble we shall devise a remedy. But before we go further, let us get this one point clear:

The abnormal force of one tooth causes trauma.

The anchored restoration may exert the abnormal force of a dozen teeth.

Trauma is a chief cause of pyorrhea.

Practically all dentists are agreed that the peridental membrane is exceedingly sensitive to mechanical irritation, and very easily injured. Dr. Clyde M. Gearhart, of Washington, has said, "Anything that causes a break in the continuity of the gum tissue may cause pyorrhea. When the vitality of the peridental membrane is impaired, the life of the tooth is threatened." Doctors Hopewell, Smith, Hartzell, Dewey, Arthur Black, and practically every other authority on pyorrhea, agree that the irritation of the peridental membrane is a chief cause of pyorrhea.

In plain language then, the force of mastication exerted upon an abutment tooth, through the leverage of a cast clasp anchored denture, results in a pathologic condition of the peridental membrane, with the consequent destruction of the cementum. This is the cause of the soreness and loosening of the abutment teeth, and where the denture is used after such effect, the positive loss of those teeth.

Danger

The effect of leverage on the abutments is dangerous because the restoration will sometimes be worn for two years before the injury is apparent. In other instances, favorable conditions of oral health keep the injury in a dormant condition for years, then a weakened systemic condition arises, and serious trouble is experienced almost over night. Usually the first sign of trouble is a sensitiveness of the abutments. A great deal of pain may be felt without any apparent inflammation of the peridental membrane. Dr. McDonagh, of Toronto, in a paper before the National Association at Chicago, cited cases in his own practice, where *"The gum margin was scarcely inflamed at all, just the slightest irritation apparent, and yet, as a result the patient has suffered inordinately."*

The percentage of cast clasp extension saddle cases that result disastrously is so high that Dr. Dittmar, of Chicago, (an authority on cast clasp technic) has abandoned the cast clasp in those cases. Much as he

would prefer the cast clasp in anchored work, he finds the Roach Attachment and an inlay more satisfactory. If the stress the cast clasp transmits could be eliminated, Dr. Dittmar would use the cast clasp in anchored work. As Samuel Smiles has wisely said, "We often discover what will do by finding out what will not do." The experiences of many able men go to show that the cast clasp will not do, without some aid which will eliminate the strain it places on the abutment. Let us persevere until we *find that aid.* Think of the result when we discover *the aid,* rigid retention with uncrowned teeth which will not be endangered from masticating stress.

Dental Fatigue

It is now known that shock is exhaustion of the medullary centres, the result of irritating the sensory (afferent) nerves; this condition, in a milder degree, constitutes fatigue. Shock is dependent upon too sudden, too frequent, too painful, too forcible, or too prolonged stimulation of the afferent nerves; the same is true of fatigue. Dental fatigue and dental shock, then, differ only in degree. Surgical shock is a dangerous condition and the general surgeon uses every precaution to prevent it. Dental fatigue bordering on shock must be handled with the greatest of care by the dental surgeon to avert shock.—W. H. DeFord, D.D.S.

Studies on the Leverage Problem of the Mandible*

By Alfred Gysi, D.D.S., Zurich, Switzerland

(*Continued from February*)

A Mathematical Demonstration

I said that the demonstration by mathematical methods was tiresome to hear and difficult to understand, and I have, therefore, shown you mostly graphic methods. But, because there may be among you some who prefer the mathematical methods or may desire to be assured that experimental results have been proven by mathematical analysis, I shall show you the computations for the distribution of force at the left canine, when twenty-four pounds of total vertical, crushing force are exerted at the points 2.

Fig. 7 makes possible a demonstration which I believe to be new and of great importance. It is that the force developed at the symphysis by the muscles of the balancing side turns the working half of the mandible somewhat into a lever of the second class during mastication; while the muscles of the working side tend to maintain that side

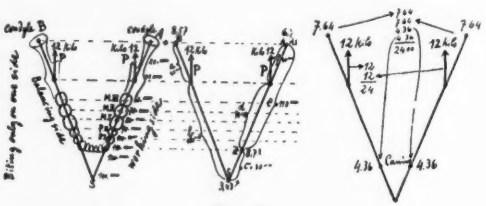


Fig. 7

as a lever of the third class. Thus, we have at the same time two contradictory forces in the mandible, which yet work together to conserve force and increase efficiency. Let me explain.

In Fig. 8, the small, hard object is being crushed at the location of the mandibular left cuspid. The force applied to the mandible is in all particulars as in the previous diagrams. Graphic or experimental demonstrations, such as we have been using, would show that when soft food is crushed on both sides of the mouth at once, at the location of the cuspids, a vertical, upward force of four and thirty-six hundredths pounds is developed at each cuspid and seven and sixty-four hundredths

*Read before the Faculty of the College of Dental Surgery, Columbia University, New York, October 6, 1920.

pounds in each condyle. When, however, hard food is crushed at the left cuspid only, quite different things happen.

Remember that the muscles of the working side exert constantly, during this demonstration, an upward, crushing force of twelve pounds applied at point 2. Remember, also, that as per the mathematical demonstration you have seen, the upward force of twelve pounds applied at point 2 of the balancing side develops an upward force of three and forty-three hundredths pounds at the lever symphysis. Consider now that the hard object between the teeth at the cuspid becomes a fulcrum about which this force of three and forty-three hundredths pounds seeks to turn the working side of the mandible and depress the condyle of that side. Bear in mind that until the hard or fibrous food has been so completely crushed that it no longer separates the teeth at the cuspids, it continues as a fulcrum.

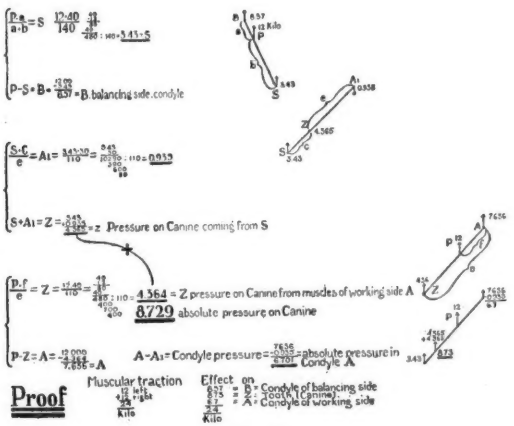


Fig. 8

The distance from the lever symphysis to the cuspid is thirty millimeters. The distance from the cuspid to the working condyle is one hundred ten millimeters. The upward force of three and forty-three hundredths pounds from the symphysis, working over the food as a fulcrum, exerts a downward force of ninety-three hundredths pounds at the working condyle. This opposes, to that extent, the upward force of seven and six-tenths pounds exerted on that condyle by the spring balance at "P" on that side, and reduces the upward force to six and seven-tenths pounds. It is a principle of physics that the fulcrum of a lever of the second class or first class must support both the power and the weight exerted upon it, so the food as a fulcrum bears the three and forty-three hundredths pounds from the symphysis, the ninety-three hundredths pounds exerted at the condyle and the four and thirty-

six hundredths pounds of upward force exerted at that point by the muscles of the working side, total eight and seventy-three hundredths pounds. This seems to me a most ingenious and effective arrangement for exerting a maximum of force with a minimum expenditure of energy, when the form of the masticating apparatus necessary for fighting, grasping, speech and mastication is considered.

The Force Exercised by Muscles

The simple apparatus and diagrams which have been shown have been employed merely to make plain the application of the principles with which we are dealing. It is now time to apply those principles to models and diagrams which correspond more closely to the complicated form of the masticating apparatus. Before doing this, we must know the actual strength of each of the muscles engaged in closing the mandible.

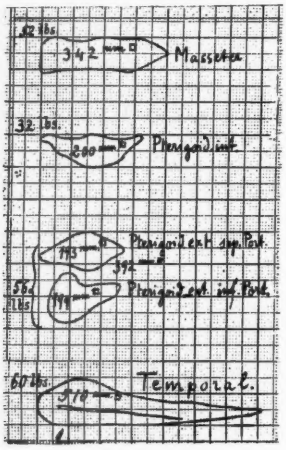


Fig. 9

Fortunately, a scientific basis for doing this has been established by the physiologists. They have measured the dimensions and strength of many muscles and have found that muscle tissue can exert from ten to twenty pounds of force for each square centimeter of its cross-section. The length of a muscle does not affect the amount of force, but only the range through which it can be exercised.

To determine the actual and relative strength of the closing muscles, I secured two heads, made cross-sections of the muscles engaged in the closing movement of the jaw, laid those cross-sections on millimeter paper, and carefully traced their outlines after the manner shown in Fig. 9.

By counting the squares within each outline and allowing one hundred squares for each square centimeter, I easily obtained the areas.

To be well on the safe side, I took slightly less than the average between the extremes of force possible to each square centimeter, and accepted fourteen pounds as the force exercised by each square centimeter of muscle tissue, as shown in cross-section. Multiplying the areas of the cross-sections by fourteen pounds gave the following results:

Temporal muscle, area 4.3 square cm., average force 60 pounds.
Masseter, area 3.87 square cm., average force 52 pounds.
Internal pterygoid, area 2.3 square cm., average force 32 pounds.
External pterygoid, area 4 square cm., average force 56 pounds.

If these figures seem small as compared with the biting power of some individuals, it should be remembered that these figures are for one side only; that this is a very conservative estimate of the average power; that in many cases the muscles may be much larger than those I measured; that their maximum power is more than double these figures; that the temporal, masseter and internal pterygoid of one side may work together; and that, as has been shown, the muscles of both sides do work together in the closing movement. Under such conditions the force exercised by these muscles may be well in excess of three hundred pounds.

Making a Model of the Mandible

I greatly desired to make a model of the mandible which should exhibit, as far as possible, not only the action of each muscle, but the action of each important group of fibres in the temporal and masseter muscles, and upon which it should be possible to demonstrate not only the inter-action of these muscles and fibres, but the amount of force developed by each in different motions of the jaw.

As a model which would permit the exercise of the relatively great forces just mentioned would be large and awkward, I determined to employ forces for the muscles: temporal 13 pounds; masseter 12 pounds; internal pterygoid 7 pounds; external pterygoid 12 pounds. These figures are practically equivalent to dividing the actual forces by 4.5, but as all are divided by the same number, the relations are not changed.

Six fairly representative human mandibles were then outlined and an outline representing their average was formulated. This was enlarged six times, and each side, as far forward as the cuspid, was sawed from a board. A separate section representing the four lower incisors was made separately, and inserted in such a way as to secure proper forward convergence of the sides.

Inside the model of the mandible was erected a wooden framework, as in Fig. 10, which permitted the attachment of a number of spring balances and threaded bolts with wing nuts by which force could be

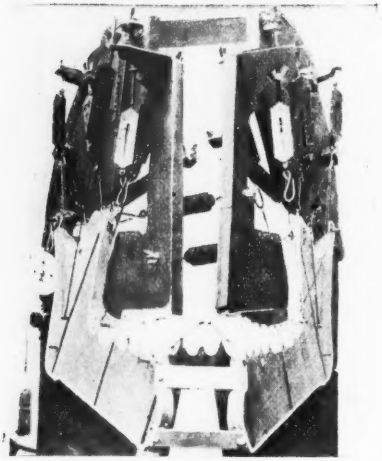


Fig. 10

changed. On each side a fossa was formed by two wooden blocks and in this fossa the condyle was held by muscular action. The condyle was not fixed otherwise in position and was free to move in the fossa as muscular action required or to leave the fossa entirely.

Direction of Muscle Fibres

From standard textbooks on anatomy the directions of the several muscles were diagrammed. Fig. 11 shows how the fibres of the tem-

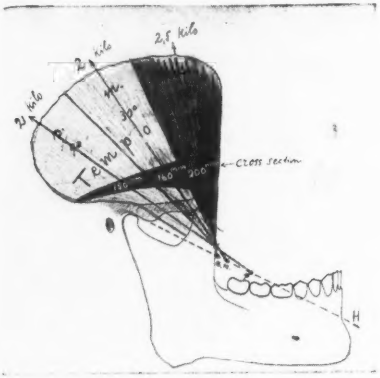


Fig. 11

poral muscle were grouped in three divisions, anterior, middle and posterior. Across the muscle is seen a diagram of the cross-section of the muscle where it is thickest. Upon each section is written the num-

ber of square millimeters of cross-section area and around the posterior margin of the muscle are written figures which divide the strength of the muscle in approximately correct portions.

The dotted line from the head of the condyle to the first molar shows the line of force when the condyle is a fulcrum and the food is crushed at the molar. The lines drawn through the centre of each section of the temporal muscle show the points at which the power generated by the fibres of that section is applied to the line of force from the condyle as a fulcrum.

The superficial and deep layers of the masseter were analyzed in the same manner.

The directions of the two heads of the external pterygoid were charted. It was unnecessary to analyze the internal pterygoid, since its fibres are parallel.

Attaching the Spring Balances.

The wooden mandible weighed six pounds.

A point of equilibrium on each side of the mandible was determined and a spring balance was attached with just sufficient tension to take

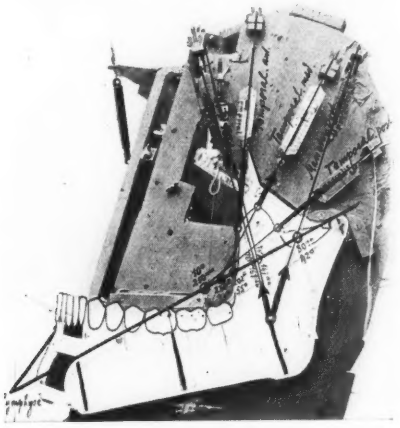


Fig. 12

up the weight, so that it could play no part in the computations. A wooden block was shaped to fit the occlusal surfaces of the mandibular teeth and so placed that before the balances representing the muscles were attached, the weight-supporting balances held the mandibular occlusal surfaces in contact with the block, with the summit of the disto-buccal cusp of the mandibular third molar and the mandibular incisor point in the same horizontal plane. The weight-supporting balances

were attached to the supporting frame by threaded bolts and wing nuts. In all movements of the mandible, it was essential to proper computations that these nuts be adjusted so that the weight-supporting balances exercised a force of just three pounds each.

Screw eyes were inserted into the mandible at the points of insertion for each muscle or group of fibres. The directions of the fibres of the temporal and masseter and of the two heads of the external pterygoid and all of the internal pterygoid were drawn from the point of proper insertion on the mandible to points on the supporting frame. At each such point on the frame, a wooden block was placed and pierced with a hole to receive the threaded bolt, as in Fig. 12. These blocks differed in extent of projection from the frame. Each projected enough to maintain the line from the spring balance to the point of insertion on the mandible at the same lateral inclination to the sagittal plane as the fibres of the muscle in the living head. The bolts were placed in the blocks, the wing nuts were placed in position and loops of heavy wire, not to be stretched by any force to be generated, were extended from the balances to the screw-eyes.

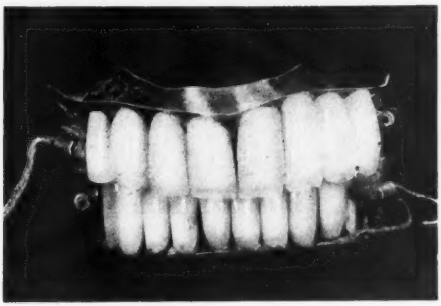
A horizontal pin was driven firmly into the centre of the outer surface of the head of each condyle and a similar pin into each of the points 3, 4 and 5 of the seven divisions of the mandible referred to in connection with the earlier illustrations.

(To be continued)

An Interesting Set of Dentures

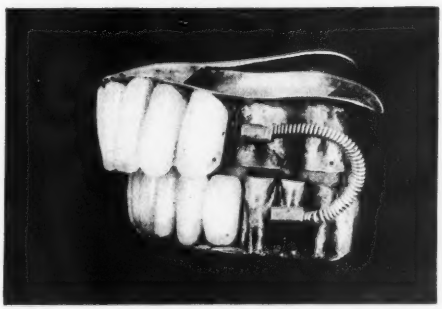
THROUGH the courtesy of Dr. Bernard N. Farren, of Quincy, Mass., THE DENTAL DIGEST presents photographs of an upper and lower denture taken from a Revolutionary tomb by workmen while excavating for a new building in that city.

The plates are of silver, gold plated. The teeth, exceedingly long, as shown in the illustrations, which are reproduced actual size, were made of porcelain of snowy whiteness, no attempt having been made to



shade them as present day teeth are shaded. They were fastened to the plates by riveting and soldering the pins. The extreme length was necessary as there was no artificial gum on the dentures.

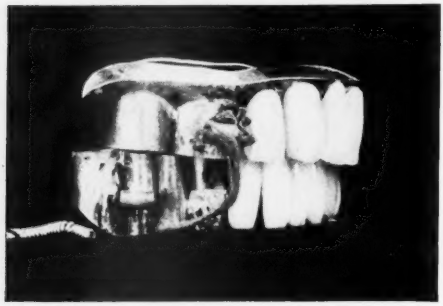
These old dentures possess two features of particular interest to modern dentists. A glance at them will show that no suction was possible. This obstacle was overcome by attaching a small coil-spring on the



buccal sides in the posterior region of both the upper and lower dentures. These springs, even when attached to the plates for photographing in the studio of THE DENTAL DIGEST almost 150 years later, exhibited a lively force upward and downward. This force, pressing the plates against the upper and lower gums, tended to keep them approximately where they belonged. We dentists cannot but admire the mechanical ingenuity of our old Revolutionary brother, however little

the patient might have been able to say for the easy-wearing qualities of dentures with a coil spring functioning in intimate contact with the mucous of the cheeks.

Perhaps of as great interest is the early attempt at artificial molars, as shown in the illustrations. They are metal cylinders of the same material as the plates into which were fitted wooden plugs. These plugs



were of a very hard wood, and gouged slightly on the occlusal surfaces to give quasi-cusps for grinding food. Originally they extended slightly above the rim of the metal cylinder and when worn down in mastication, could be replaced.

When examined in the office of THE DIGEST, these dentures were in a very good state of preservation with the exception of the improvised molars and bicuspids in two of which the wooden plugs were missing. In nine of the others the plugs had been worn down even with or below the rims of the cylinders. One plug had been worn very little and was apparently in its original condition. Whether the wearer of these dentures went through the later years of his life with this one "tooth" literally a sixteenth of an inch longer than its neighbors, or had a refill put in just before he crossed the Great Divide will remain one of the unsolved mysteries in the History of Dentistry.

(Slightly reduced in size)

Orthodontia for the Consideration of the Average Dentist

By Dr. Samuel Herder, New York, N. Y.

(*Second Article*)

As I have stated in my first article on the above subject, no dentist can consider himself progressive who persists in remaining ignorant of at least the general and fundamental principles of orthodontia. Its beneficial influence upon the health and future welfare of the patients concerned, is so great that its continued neglect seems almost unpardonable.

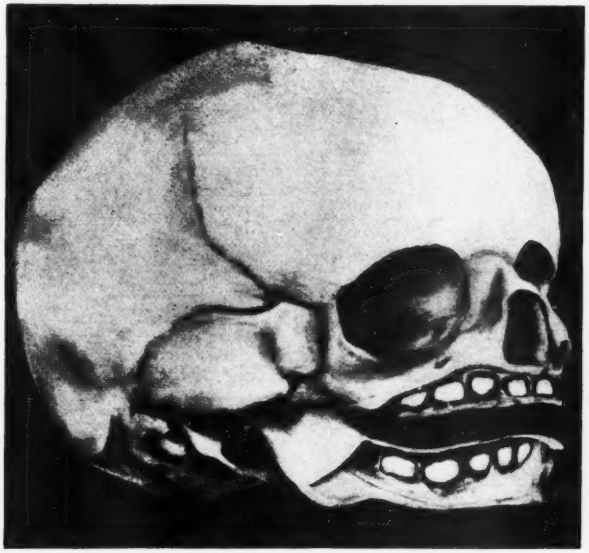


Fig. 1. Represents the skull at birth. A few points of especial interest may be noted. The temporary teeth, though unerupted, may be seen to have been partly formed as follows: The crowns of the centrals; three-quarters of the crowns of the laterals; one-half of the crowns of the canines; one-half of the crowns of the first and second molars, and the cusps of the first permanent molar (which are not shown).

It is reasonable to assume that if the dentist has a good understanding of the normal dental apparatus, he will be in a far better position to detect the abnormal, and thus go a long way towards at least assisting in its correction. Such an understanding will not only enable him to restore the dental apparatus of any given patient more efficiently, but it will also enable him to cooperate very successfully and pleasantly

with the orthodontist who is correcting the malocclusion of one or more of the dentist's patients. It is of course needless to say that the dentist who does not understand what the normal dental arches should be, is certainly in no position to correct even very slight cases of malocclusion.

Eruption of the Teeth

On this subject John S. Marshall says: "From birth to the fourth or fifth month the salivary glands seem to be quite inactive, but as the time approaches for the teeth to begin the process of eruption the

Fig. 2. Shows the jaws at 10 months of age. The centrals may be seen well erupted, the laterals three-quarters erupted and the crowns of all of the temporary teeth formed. The cusps of the first permanent molar have also been formed. These are not shown in the upper jaw.

salivary glands take on a marked activity, the flow of secretion being so abundant as to cause it to dribble from the corners of the mouth and to wet the garments about the neck and chest." In considering the subject of tooth eruption, it seems to me that every dentist, certainly every orthodontist, ought to become familiar with at least the approximate time of the eruption of the human teeth. The proper development and growth of the jaws depend to a considerable extent upon the normal eruption of the teeth. The shape of the jaws is particularly dependent upon the position in which the teeth erupt; for the alveolar bone in

which the roots of the teeth are invested, always grows and develops around them no matter what their position may be. The importance of this fact can of course be very readily seen. I will therefore in a brief, easily understandable manner, give the order and the age of the eruption of healthy human teeth. Realizing that the use of more than one figure to denote the year or month of eruption, renders their being memorized more difficult, I will therefore, as far as possible, confine myself to but one figure.

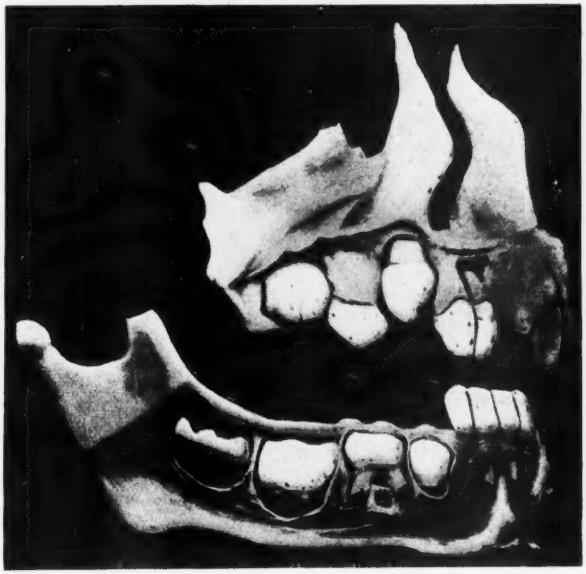


Fig. 3. At the age of 1 year. The incisors may be seen to have been completely formed and erupted. The canines and molars are very near the point of erupting, and the crowns of the first permanent molars are about one-quarter formed. The formation of the upper first molars are not shown.

ORDER AND AGE OF ERUPTION OF THE TEMPORARY TEETH

The centrals at 6 months of age of the child.
The laterals at 8 months of age of the child.
The first molars at 14 months of age of the child.
The canines at 17 months of age of the child.
The second molars at 26 months of age of the child.
(See figures 1 to 6.)

In the case of the centrals and laterals there may be a variation of one month; that of the first molars two months; that of the canines three months; and that of the second molars six months above or below

the age given in the above table. The above and succeeding tables have been arranged from such text books as those of C. N. Johnson and J. S. Marshall.

It is seen from the above table that at about two or three years of age, the child has all of its temporary teeth. Nature has decreed that this full set of teeth thus erupted shall be used at least about five years before a single tooth is shed. This shedding, which commences with the loss of the centrals at about seven years of age, continues until the child is about twelve years of age.

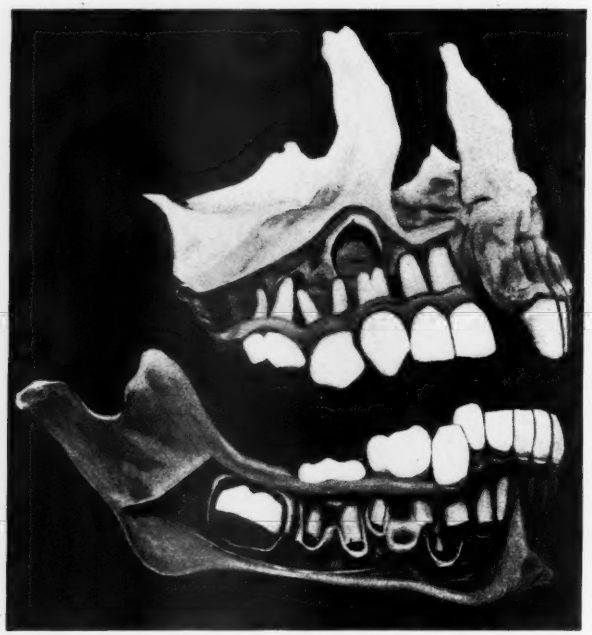


Fig. 4. At 2 years of age. All of the temporary teeth may be seen to have fully erupted, with the exception of the second molars which are only partly erupted. About one-half of the crowns of the first permanent molars have been formed. The latter are not shown at all in the upper jaw.

The Mixed Denture

Between the ages just cited, the child has some of both the temporary and the permanent teeth. This period is known as the period of the mixed denture. (See figures 6 to 10.) The importance of preserving the temporary teeth may be clearly seen, when purposeful nature's iron-bound law of retaining some of them as long as about the age of twelve years is observed. Their presence, so necessary to the proper develop-

ment of the jaws preparatory to the advent of the permanent teeth in their normal position, must not be lightly overlooked.

Neglect of the Temporary Teeth

The statement just made ought to be clearly borne in mind by those dentists, parents or guardians who ruthlessly neglect (usually from a lack of proper information) the temporary teeth of children, thus endangering their health and the integrity of the succeeding permanent teeth. The thread-worn excuse that the temporary teeth will very soon

Fig. 5. At 2½ years of age. All of the temporary teeth may be seen to have been formed and completely erupted. Some of the permanent teeth have also been formed as follows: Part of the crowns of the incisors and canines (the upper of which are not shown), and the first bicuspids, which are beginning to be formed.

be replaced by the permanent ones, and may therefore be neglected or extracted at the whim of the ignorant dentist, is as vicious as it is false. The dentist should never forget the fact that *alveolar bone grows and develops around the roots of teeth*, no matter where those teeth may be situated in the region of the alveolus of the jaws of living persons. The malposition of the teeth, therefore, not only involves the teeth, but the bone which envelops them as well. The premature loss of a temporary tooth, it should be noted, results in the subsequent drifting to a certain

extent of other teeth, particularly those immediately adjacent to the place formerly occupied by the lost tooth. This drifting occurs in the direction of least resistance, which is usually towards the place formerly occupied by the lost tooth. The result is lack of room for the normal eruption of the permanent teeth, the inevitable consequence of which is always *malocclusion.*

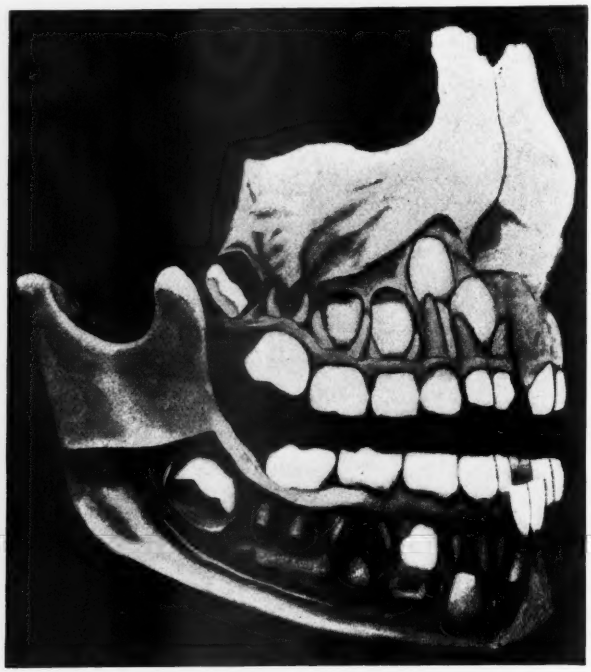


Fig. 6. At 5½ years of age. The permanent centrals may be seen to have erupted, thus displacing the temporary centrals. The first permanent molars have fully erupted and taken their normal position distal to all of the temporary teeth. The crowns of the second permanent molars have only been partially formed. The crowns of the bicuspids may be seen to be enveloped by the roots of the temporary molars. The crowns of the permanent canines and laterals may be seen in close proximity respectively to the temporary teeth of the same names. The formation of the second bicuspid and lateral of the lower jaw is not shown.

(*To be concluded in April*)

The Retention of Artificial Dentures

By C. A. Howland, Rochester, N. Y.

It is quite usual to attempt the explanation of failure on the patient's part to wear an artificial denture through merely a consideration of the physical and mechanical factors involved, and it often seems that too little attention is given to other equally important factors. If sound physical and mechanical principles have been built into the denture in question and it might still be considered a failure from the wearer's standpoint, would it not be wise to consider the mouth from the physiological and pathological standpoints and the case as a whole from the psychological standpoint? An earnest study of our cases will prove to us beyond question that these are factors to be reckoned with.

For convenience suppose we group the factors concerned in the retention of dentures into four groups: physical, physiological, mechanical, and psychological.

Perhaps the greatest physical principle involved in the retention of dentures is adhesion, which is greatly dependent upon the design of the denture base. Generally speaking we may say that the force of adhesion is present in direct proportion to the area covered by the base, the adaptation of this base to the tissues at the periphery and the palatal extension of the base. The design and extent of the base is best accomplished in the mouth itself at the time the impression is taken—in fact, by following certain technique of impression taking, the impression *is* the denture base, practically speaking. The height of the flange at the periphery and the palatal extension are automatically established by the patient's muscular action and a base constructed from such an impression will prove to cover as great an area as the patient can *at that time* tolerate. Following the wearing of such a denture for a certain time, say a year, it will be found in the majority of cases that a denture covering a much greater area can then be constructed. This substituting of one denture after another is necessary in a certain percentage of cases where maximum retention is the object.

The force of adhesion is also greatly dependent upon the saliva, which is the interposing medium between the denture and the area covered by it. Adhesion is present in inverse ratio to the viscosity of the saliva—the thicker and more viscous the saliva, the less the adhesion and the thinner the saliva, the greater the adhesion.

This question of the viscosity of the saliva should also be considered from a physiological standpoint, as we must consider the health and general tone of the individual presenting the abnormal secretion. In different diseased conditions we are called upon to deal with two extremes of saliva, the excessive and very viscous secretion on the one

hand, and the almost complete absence of it on the other. Just what systemic conditions are revealed by these extremes is not well understood, but it is the writer's impression that neither condition is met with in robust health. Diabetic patients who are under treatment usually present saliva of unusual viscosity—possibly due to the restricted quantities of fluids in their diet, or possibly it is a symptom of the disorder itself. They are always mighty poor risks for the prosthetist.

The physical condition of the patient and the degree of tissue tone have an important bearing upon the retention of dentures. It is common to encounter individuals who, having worn dentures satisfactorily, show signs of failure when a debilitating illness overtakes them. When the tissues lose tone through age or illness they are not well suited for best results with dentures.

The condition of the mucosa and submucosa is of the utmost importance in considering a mouth for dentures. An evenly distributed amount of soft tissue overlying the bony substructure will, other things being equal, favor the retention of dentures, because it allows the denture to be gently cushioned on the hard, bony prominences and it allows a slight imbedding of the margins of the denture, affording a valve seal. Jaws that have been edentulous for years, and have served a masticatory function without the aid of dentures, develop an unusual degree of toughness and hardness, the mucous covering being so thin that any effort to imbed the denture margin will be defeated. Doctor Dayton Dunbar Campbell, taking advantage of the well known fact that bone will absorb in the presence of undue pressure or irritation, has devised a treatment for this type of case. A vulcanite denture is constructed over an ordinary plaster cast without making any attempt to finish the palatal surface of the denture—in fact, a roughness is encouraged by not varnishing the cast, allowing the vulcanite to form tiny nodules by filling the pores of the plaster cast. The irritation caused by this roughness will, it is claimed, cause an absorption of bone and a consequent thickening of the overlying mucosa, transferring the case from a poor risk to an ordinary one.

A routine practice of radiographing edentulous cases will reveal the fact that pathological conditions are present far more often than we may realize. Granulomata and vestiges of abscesses are quite often discovered completely walled in by bone, root ends are numerous, and not infrequently discharging sinuses are found. The presence of such conditions is an eloquent plea for a much more thorough surgical preparation of the mouth that is to be fitted with dentures. Alveolectomy should be more commonly practised. This will give an opportunity for thorough examination of the alveoli and removal of pathological tissue discovered. Following the thorough performance of this operation, satisfactory dentures may be inserted in an incredibly short

time. Patients are spared months of waiting for absorption to take place and the mouth heals much more satisfactorily and symmetrically, giving us the best possible opportunity for good dentures. Another condition requiring surgical procedure is very common and familiar to all of us, that of loose, movable tissue in greater or less amount on either ridge, but more often found on the anterior portion of the maxillary ridge. It is usually the result of undue occlusion of a few anterior lower teeth with an upper denture. It is a comparatively simple operation to excise this tissue and it should be done whenever indicated. The very thin, commonly known as knife-edge, mandibular ridges are a source of much annoyance to one wearing dentures. Much can be done for the patient's future comfort by removing this excessively thin portion. As conscientious operators we should be willing to assume our fair share of responsibility for the success of the dentures we construct, but the patient should be made to understand that he also must assume some of the responsibility, and whenever surgical preparation of the mouth is necessary his responsibility begins if he refuses operation. If we are to construct acceptable dentures, we must have all the advantage that a good foundation can give us, and even then difficulties will be encountered.

No doubt all of us have been impressed in about the same way with the characteristic manner that practically all mandibular dentures have in apparently defying all the laws of physics as applied to their retention. We have no difficulties in retaining maxillary dentures as a rule so great that they cannot be overcome, but separate and distinct mechanical laws seem to have been invented to operate in dislodging our mandibular cases. Our trouble has been that we have been unsuccessful in applying physical laws known to be adequate to the retention of these cases.

Mandibular dentures can be retained by application of the same forces that operate to retain maxillary dentures, and results are accomplished in much the same way, namely, the close adaptation of denture to tissue, the extension of the periphery to form valve-like edges with the soft tissues and a very careful handling of margins that must terminate on hard ridges. Our trouble has been in overextending on hard areas and underextending on soft areas. Dr. Tench recognized this fact in devising his wonderful technique for mandibular impressions in modeling-compound. Extension on to soft tissue distal to the ridge is carried to almost an unbelievable degree in certain cases. Extending the denture so as to terminate within the area of this tissue insures a valve which tends to give stability to the denture.

In the anterior portion of the mouth extension is automatically established by muscular action. Valve seals are made on the lingual side of the anterior portion of the ridge and under the lip by means of this

muscle trimming. The denture must terminate, following this method, lingually on the mylohyoid ridge and buccally on the external oblique line. Briefly, this covers the essential points of this method, which, if properly executed will yield a mandibular denture of very marked stability, or, as ordinarily termed, will have "strong suction."

Volumes have been written on the subject of articulation and authorities still hold diverging opinions. Systems are expounded and articulators invented to prove each system, but who is a better judge of comfortable, efficient articulation than the individual wearing the dentures? Systems and articulators are but means to an end, the end being comfortable and efficient dentures, and without doubt any one of the popular systems before the profession today is capable of meeting this requirement if intelligently used.

There is opportunity for the exercise of a good bit of psychology in fitting a patient with new dentures. It seems difficult, for instance, for patients to dissociate the idea of gagging from dentures with long palatal extensions; they believe it to be cause and effect. If the palatal extension of the denture is adapted to close contact with the stationary soft palate, gagging can usually be overcome, regardless of the fact that the new denture may be considerably longer than the former one. If the patient can be prevented, by almost any means, from giving himself the suggestion that this added length will give trouble, very satisfactory results will be obtained. This trouble is usually psychic and it must be treated largely by suggestion.

We may, ourselves, be enthusiastic and have confidence in our work, but from a psychological standpoint, too much of this display will result in disaster for both our patient and ourselves, for the reason that hopes are created within the mind of the patient that cannot possibly be realized. Prospective patients should be made to thoroughly understand that the loss of the teeth is akin to the loss of any of nature's organs and a serious misfortune, and not to be treated lightly. We should be constantly on our guard to discourage false hopes of the patient in anything that we can construct as being even a fair substitute for the natural teeth. Many have sacrificed their teeth in an effort to regain health and now find themselves, with keen disappointment, equipped with makeshift dentures. To these unfortunates we owe a duty. When once it has been determined that it is in the patient's interest to sacrifice natural teeth and substitute artificial dentures, let us do it to the best of our ability, with care and thoroughness, and let us try to prepare ourselves so that our ability will be worthy of the confidence placed in us by those who are truly unfortunate and looking to us for relief.

903 Chamber of Commerce Bldg.

A Discussion of Three Pyorrhea Cases

By Dr. H. J. Stehl, Corona, L. I., New York

TO say that pyorrhea is purely a local affliction is wrong. It is equally wrong to say that pyorrhea is wholly systemic in its origin. There are many cases of localized pyorrhea in which a urin analysis shows a normal metabolism. On the other hand, there are many cases of systemic pyorrhea with no local cause whatsoever. The most stubborn cases are those in which we have to contend with abnormal amounts of uric acid in the system. The most common cases are those which result from auto-intoxication.

Three years ago a woman came to my office to be treated for pyorrhea. She was very anaemic and was teeming with uric acid. She wore a full upper plate. On the lower jaw, the bicuspids and molars had been extracted but the cuspids and incisors were present. These teeth were in good condition but the gums were boggy, purplish in color and swollen. Pus was flowing from the sockets constantly. She was sent to me by a physician who had been treating her for rheumatism. Fortunately she had faith in my ability to help her, and followed my instructions to the very letter. I treated this case as follows:

Local treatment.—I scaled her teeth as thoroughly and as carefully as I could, trying to avoid bleeding as much as possible. Using rubber gloves I massaged the gums gently, working from the apices toward the crowns of the teeth. A constant flow of pus is a chronic condition, and I don't believe in using drugs in such cases. Violent massage is to be avoided, for merely stopping the flow of pus will not bring about a regeneration of the alveolus. The electric vacuum machine which is used to massage the gums removes the pus but does not massage the gums. Many dentists use this machine, and when the pus stops flowing tell the patient he or she is cured. In the course of a few years a recurrence of pus is noticed and the patient comes back for another treatment. Such recurrences are quite profitable to the dentist, but is it fair to the patient?

Systemic treatment.—I put the patient on a diet of whole wheat bread, boiled fruit, raw fruit, vegetables, peanut butter, salt and water. I advised her to eat celery with every meal. Stress was laid on the importance of walking in the open air and sleeping with the windows open. Tea and coffee are harmful in such cases, so I told her to drink Kneipp coffee instead. For a month she took a hot epsom salt bath every day.

Fifth week. First day.—The patient was instructed to rub her feet with a towel soaked in water at 99°F. This was done for fourteen

seconds. Then she rubbed her feet with a towel soaked in water at 60°F., rubbing for fourteen seconds. Following this she walked for a mile in the open air.

Second day.—She was instructed to use the towels the same as the first day, at the same temperatures and for the same length of time, the only difference being that the treatment was extended to the knee.

Third day.—The arms and neck were similarly treated.

Fourth day.—The entire body with the exception of the head was given the same treatment. After each of these treatments she walked in the open air.

Fifth day.—She was instructed to sit in hot water at 99°F. up to the waist, the time being fourteen seconds as before. Immediately following this she sat in cold water at 60°F. for the same length of time. The fourteen seconds is derived from the cycle of the systemic blood circulation.

Sixth day.—the entire body with the exception of the head was immersed in water at 60°F. and 90°F. alternately for the same length of time, namely fourteen seconds in each. By this time her vitality was raised considerably. She slept well at night and had a good appetite. When she first came to me, she spoke of pains in the shoulder and elbow joints. These pains stopped after the fifth week. The flow of pus from her gums became less and less and at the end of the sixth week stopped entirely. The gums became firm, with a healthy pink color. The teeth were firm and I was highly pleased as was the patient.

She was advised to keep up the diet I recommended as well as the hot and cold water treatment.

A few weeks ago this patient called at my office to have her teeth scaled. I had not seen her in three years. Her teeth were still very firm and her gums in excellent condition.

Case No. 2.—This was a purely local case. A man, age fifty, came to me to have his teeth cleaned. I noticed a flow of pus from the lower right lateral incisor. Urin analysis showed a normal metabolism. He was a policeman and had twenty-seven sound teeth. I scaled all his teeth thoroughly and massaged his gums once a day for a week.

With gold bands soldered together I made a brace, cementing it in place to give the afflicted tooth as much rest as possible. Then I told the patient to call in a month's time, which he did.

I was surprised to find the process almost normal, the gums healthy and no pus. The patient wore the brace for a year longer, at which time I removed it. There was no recurrence of pus.

Case No. 3.—A man called to have his teeth cleaned, age twenty-five, occupation, chauffeur. A year previous he had suffered from influenza in France. He was very fond of meat, eggs, milk and pastry.

His teeth, twenty-nine in number were all eroded from an iron tonic. The gums had receded from all the teeth. At the upper right cuspid the recession had extended half the length of the root.

There was very little tartar and no pus. But the gums were swollen and inflamed with a bright red color. He spoke of being constipated at times.

Examination of his urin showed uric acid in abundance. My diagnosis was acute local and systemic pyorrhea. I found a few days later the patient had been using a very stiff toothbrush three times daily. I advised him to procure a soft brush and use it once daily, avoiding his gums. There is no doubt in my mind that if this case had been neglected, chronic systemic pyorrhea would have developed.

For twenty-eight days I treated this case, first scaling the teeth thoroughly, then massaging the gums, regulating the diet, applying epsom salt baths and hot and cold applications of water.

During the third week the swollen condition of the gums subsided and I was pleased to notice a healthy pink color. After a year's time the patient called again and the gums were still in a healthy condition.

For many years I have been trying to bring about a regeneration of the alveolar process in chronic cases of systemic and local pyorrhea. My paper on the regeneration of the alveolar process will follow.

"Nerves?"—Go Back to Nature

By E. A. Randall, D.D.S., Turo, Nova Scotia

To any dentist who has been in active practice for twenty years or more I am going to ask a question. Have you ever felt so sick and tired of your office that you would like to fly away? At one period in my life I was almost at the point of a nervous breakdown. I had reached the stage that I dreaded to hear the ring of my office bell, and the filling or extraction of a tooth was more painful to me than to the patient.

I got an old friend who was a hunter and trapper to build me a shack on the border of a lake about 15 miles distant from the nearest human habitation. I obtained a supply of canned food, and the old man hitched his horse to a wood-shod sled and dragged my bedding and food supplies through the forest primeval to my haven of rest and he left me there.

I said to my watch, "I have been your servant for over twenty years and now I am going to be free. I will dispense with your services," and I let the watch run down. For two weeks I lived absolutely alone, taking no account of time. I fished the lake for trout when I felt inclined, and I ate my meals only when I was very hungry.

At first I could not sleep, and for three nights I lay awake and heard the hooting of the owls, the screeching of wild cats and other denizens of the forest. However, sweet sleep came at last and I slept from sun down to sun down. After that I used to sleep about sixteen hours out of twenty-four. I realized that I was getting a firmer grip on my nerves day by day, and at the end of two weeks I felt like a new man. I was saved from a prolonged illness.

When I was fifty years of age I selected as my hobby fox ranching (raising silver foxes in captivity). Beginning in 1914 with two pairs of foxes and each year selling live foxes or pelts sufficient to pay expenses and build one or two more pens, there are now twenty-two foxes in the ranch. The ranch is situated out of town four miles distant from my office. I have a Ford car and go in and out daily. I sleep in a room overlooking the ranch only a few feet from the pens and the barking of the foxes in the night is sweet music in my ears. I spend one hour every morning among my pets and two hours every evening. They are so tame that they take food from my hand.

During the time that I spend in the ranch I forget that I am a dentist. I am a better man than I was six years ago. My nerves are like iron and I can do more and better work in five hours than I used to do in eight, and my cash receipts are larger than they ever were. My advice to you, confreres, is to have a hobby that will take you out of your office and make you forget for eighteen hours out of twenty-four that you are a dentist.

A Sign That Does Your Talking

OUR UNDIVIDED ATTENTION IS GIVEN THE PATIENT IN THE CHAIR.

The reservation of appointments, payment of accounts and all other business transactions should be made at Secretary's desk.

The above represents a sign seen in the dental office of Dr. Frink, at Jacksonville, Fla. It measures about 9x12 inches, is mounted on a pedestal, with the reading matter showing on both sides, under glass, and plainly visible from all parts of the reception room. It appears to be very business like, without being obtrusive or personal so far as patients are concerned.

Ether Administration in the Upright Posture

Complications under etherization are distinctly respiratory in character, according to Dr. Frank D. Sanger, in Journal A. M. A. Hence it would seem logical to operate on patients under ether anesthesia in the same posture in which conscious patients seek relief from respiratory embarrassments, such as cyanosis, dyspnea and apnea. The same proposition held true for patients with broken compensation, despite the time-honored theory of cerebral anemia. Even for artificial respiration the upright posture has all the anatomic and physiologic advantages, since in it all the muscles assisting in the respiratory act have their proper play. The position offers many advantages from the operator's standpoint. The exposure in nose and throat work is good, illumination is easy, and hemorrhage and oozing are less troublesome than in the recumbent posture. Less assistance is required. Ether administered by any method in this posture is easy; not infrequently the anesthetist can act as surgical assistant as well. I have never had an ether death or serious ether emergency in twenty-two years, during which I have employed the upright posture constantly.

Case Report

By Dr. L. Neal Rudy, New York City

Mr. N., age thirty-five, wished me to find out if his teeth were a causative factor in his ill health. After taking radiographs of his teeth I found a number of abscesses, one of which I report as follows: He gave a history of having had his superior central incisors extracted ten years before. These had been supplied by a stationary bridge supported by the laterals. The radiographs showed the abutments to

be vital teeth. They also showed a large abscess, formerly at the apex of one of the centrals still remaining in the bone. The accompanying radiograph shows the abscess quite distinctly. After anesthetising the part I removed the abscess and diseased bone, following the same procedure as in root amputation. This report simply emphasizes the importance of curetting sockets after extraction.

Federal Income Tax Information

Work has begun on the collection of the income tax for the year 1920. Uncle Sam, through the Bureau of Internal Revenue, is addressing to every person in the United States the question, "What was your net income for 1920?" The answer permits of no guesswork. Every single person whose net income for 1920 was $1,000 or more and every married person whose net income was $2,000 or more is required to file a return under oath with the collector of internal revenue for the district in which he lives on or before March 15, 1921.

The penalty for failure is a fine of not more than $1,000 and an additional assessment of 25 per cent of the amount of tax due. For willful refusal to make a return the penalty is a fine of not more than $10,000 or not exceeding one year's imprisonment, or both together with the costs of prosecution. A similar penalty is provided for making

a false or fraudulent return, together with an additional assessment of 50 per cent of the amount of tax evaded.

Women Must Pay Tax

The income tax applies to women as well as men. Husband and wife must consider the income of both plus that of minor dependent children, and if the total equals or exceeds $2,000 a return must be filed. A minor who has a net income in his own right of $1,000 or more must file a separate return. To be allowed the $2,000 exemption a married person must be living with husband or wife on the last day of the taxable year, December 31, 1920. Divorcees, persons separated by mutual agreement, widows and widowers, unless they are the sole support of others living in the same household, in which case they are allowed the $2,000 exemption granted the head of a family, are entitled only to $1,000 exemption.

Tax Rates For 1920

The normal tax rate for 1920 is the same as for 1919—4 per cent on the first $4,000 of net income above the exemption and 8 per cent on the remaining net income. This applies to every citizen and resident of the United States. In addition to the normal tax a surtax is imposed upon net income in excess of $5,000.

The obligation to consider his own case and to file an income tax return on time, if one is due, is laid squarely on the shoulders of every resident of the United States. Guesswork is barred. The returns are sworn statements, and accuracy is essential. Salaried persons and wage earners must ascertain the actual compensation received. Bonuses, shares in the profits of a business, values of quarters and board furnished by an employer, and other items of compensation for services must be included.

When Due

This year, as last, the tax may be paid in full at the time of filing the return, on or before March 15, 1921, or in four installments, the first of which is due on or before March 15, the second on or before June 15, the third on or before September 15, and the fourth on or before December 15.

The return must be filed with the collector of internal revenue for the district in which the taxpayer lives. Heavy penalties are provided for failure or willful refusal to make a return and pay the tax when due.

If the war had not been won in 1918, what would have been your income tax for 1920? Pay it with thankfulness.

Be thankful you are paying an income tax to Uncle Sam and not an indemnity to William Hohenzollern.

INCOME TAX IN A NUTSHELL

WHO? Single persons who had net income of $1,000 or more for the year 1920; married couples who had net income of $2,000.

WHEN? March 15, 1921, is the final date for filing returns and making first payments.

WHERE? Collector of Internal Revenue for district in which the person resides.

HOW? Full directions on Form 1040A and Form 1040; also the law and regulations.

WHAT? Four per cent normal tax on taxable income up to $4,000 in excess of exemption. Eight per cent normal tax on balance of taxable income. Surtax from 1 per cent to 65 per cent on net incomes over $5,000.

The Chicago Meeting

That the fifty-seventh annual meeting and clinic of the Chicago Dental Society, held at the Congress and Auditorium hotels, Chicago, Ill., U. S. A., January 27-29, was the most successful and important in the history of the organization, was the consensus of 5,000 visiting dentists and members of the society at the close of the meeting. In mere matter of attendance the meeting was the largest ever held, and questions before the dentists—both along clinical and general topics—commanded more attention from both dentists and the public than ever before.

Mouth hygiene was probably the chief topic of the meeting. Friday, January 28, was called mouth hygiene day. During the week of the meeting, the public schools of Chicago held mouth hygiene meetings and lectures each day. The school children listened to talks on mouth hygiene, and held tooth-brush drills and the like each morning. Children from each public school were present at the morning clinics Friday to demonstrate what they had learned about the important topic of mouth hygiene. A mass meeting, held at 3:30 Friday afternoon at the Auditorium Theatre, included 1,600 teachers, whose classes had been dismissed by Peter Mortensen, superintendent of schools, so that they might attend this meeting.

Directly in connection with the mouth hygiene movement was the stressed point of mouth hygienists. Visiting dentists urged that the state of Illinois pass the law now operating in ten states that creates the mouth hygienist, a professional similar to the trained nurse in the medical profession. Mouth hygienists will be largely recruited from the ranks of dentists' assistants, who will be able, after the law is passed, to do actual work upon a patient's mouth—something now prohibited. A

course at some dental college, of course, would be necessary to qualify under the law, but the requirements of the ten states now using the law make the term of study comparatively brief. The hygienists also will work in the school clinics and dental infirmaries.

A banquet, held Friday night, January 28, in the Gold Room of the Congress, was attended by 700 visitors. Thomas Alexander Forsyth, Boston, founder of the famous Forsyth Dental Infirmary, was to have been the guest of honor, but a nervous breakdown prevented Mr. Forsyth, who is not a young man, from being present. However, the value and necessity of a dental infirmary, as typified by the Forsyth institution, was discussed enthusiastically by the speakers of the evening. Among the guests were President Harry Pratt Judson, the University of Chicago; President Walter Dill Scott, Northwestern University; Peter Mortensen, superintendent Chicago Public Schools; Dr. John Dill Robertson, Chicago commissioner of health. Some of the speakers were: Dr. Timothy Leary, Boston; Dr. Guy S. Millbery, San Francisco, dean of the dental department in the University of California; Dr. Harvey J. Burkhart, Rochester, New York; Dr. A. W. Thornton, Montreal, dean of the dental college in Magill University; Dr. H. E. Friesell, Pittsburgh, Pennsylvania, president of the National Dental Society, and Dr. C. N. Johnson, Chicago.

Nearly one hundred clinics, on every possible technical subject, were held during the three days of the meeting. A large meeting was held in Orchestra Hall on Thursday night, January 27, at which Dr. Ernest E. Irons, Chicago, gave an illustrated lecture on "Chronic Infections and Their Sources." Other talks, delivered before large audiences, were those by Dr. Wallace Seccombe, Toronto, Canada, on "Diet in Relation to Oral Hygiene"; Dr. William A. Evans, Chicago, on "Child Health in Relation to Adult Health"; Dr. Alfred C. Fones, Bridgeport, Conn., director of dental hygiene in the Bridgeport public schools, on "Mouth Hygiene in our Public Schools."

Dental exhibits took up a good deal of space in the two hotels, over one hundred concerns having exhibits. For the first time in history, the samples of tooth-paste, mouthwash, etc., were exhausted during the first day of the meeting, and the exhibitors had brought over 7,000 pounds of material. More samples were shipped in after hasty telegrams. Officers of the Chicago Dental Society are: George G. Knapp, President; E. D. Coolidge, Vice-President; M. M. Printz, Secretary; H. B. Pinney, Treasurer; A. M. Hewett, Librarian.

DENTAL LAWS

Dentistry in the Panama Canal Zone

By Alphonso Irwin, D.D.S., Camden, N. J.

The conditions under which dentistry is practised in the Canal Zone are different from probably anywhere in the United States.

No dentists practise here except as employees of the Panama Canal, known as District Dentists. They are selected by the Chief Health Officer from a list of applicants, according to education, experience and recommendations. No examination is necessary, and of course no fee is charged. They are given certain privileges and the Governor fixes the schedule of charges which they may apply. Legislation is not necessary, since they are employees. The circular covering the charges is as follows:

DISTRICT DENTISTS

1. Dentists may be employed without salary, but will be privileged to charge certain fees for services, and will be entitled to privileges accorded employees on the gold roll. During the first two years of service they shall be entitled to privileges and allowances of employees on the gold roll drawing $2,400 a year, and after two years' satisfactory service may be assigned to the same class of quarters to which an employee drawing $3,000 a year is entitled. Office room and office furniture will be supplied by the Panama Canal.

2. In return for these allowances they shall be subject to all the rules and regulations of the Panama Canal, and shall do dental work for employees of the Panama Canal and their families, and for employees of contractors for the Panama Canal and members of their families, at rates to be fixed by the Chief Health Officer. These rates shall be posted conspicuously in each office, as follows:

TABLE OF FEES

Professional visits at home of patient	$2.00
Devitalizing pulp and removing same	2.00
Treatment of alveolar abscess, each treatment	.50
Treatment of root canals and teeth, each treatment	.50
Filling roots of teeth	$1.00 to 2.00
Fillings of porcelain	3.00 to 6.00
Fillings of gold	2.00 to 8.00
Fillings, gold inlays	5.00 to 15.00
Fillings, amalgam	1.00 to 3.00

Fillings, cement	$1.00
Fillings, gutta percha	1.00
Cleaning teeth, removing calculus, treatment of pyorrhea and diseases of the oral cavity generally, each treatment	50c to 2.00
Cleaning of children's teeth	1.00
Extraction of tooth	.50
Extraction of impacted tooth	5.00
Extraction of children's teeth, each	.50
Anesthesia, local	extra .50
Gas	extra 3.00
Post extractions, treatment	.50
Full artificial upper or lower dentures (or plate):	
Vulcanite, each	$20.00 to $30.00
Gold, each	75.00
Aluminum, each	30.00 to 40.00
Partial dentures	20.00 to 30.00
Crown work, incisors and bicuspids, each crown	8.00 to 9.00
Crown work, molars, each crown	10.00
Bridge work (bridge attachments considered as teeth), incisors and bicuspids, per tooth	8.00 to 9.00
Bridge work (bridge attachments considered as teeth), molars per tooth	10.00
Porcelain crowns with cast base	10.00
Removing crown	1.00
Removing bridge of more than one crown abutment	2.00
Examination (routine), for estimate	No charge

CHESTER HARDING, Governor,
D. P. CURRY,
Acting Chief Health Officer.

DENTAL LAWS IN SWITZERLAND

Through what schools is it necessary to pass to obtain authority to practise dentistry in Switzerland?

Through no school; but it is necessary to pass an examining board either in Zurich, Basel, Geneva, Berne, or Lausanne. It is necessary to have the "Maturitaet" and "Propedeuticum" before being permitted to hear lectures and clinics at the university. At these there is no examination, excepting in Geneva; but a certificate of attendance is issued, and this certificate entitles the holder to an examination by one of the above federal boards.

Before whom are the examinations held—cantonal or federal authorities? Only federal, except Geneva.

If an examination has been passed before the federal board and a diploma is granted, does this carry with it the authority to practise in any canton in Switzerland without any further examination? Yes.

Is the practice of dentistry controlled by the cantonal authorities, each for themselves, or is there a federal law or control upon the subject? The practice is controlled by the cantonal authorities.

What procedure is necessary in order to enable an American dentist to practise as an assistant to a recognized practitioner? Differs in different cantons.

Is it necessary that he should speak any special language, or must he present a diploma from any special American college? Language is immaterial, and no American college is especially recognized (vide cantonal laws).

In the event of the absence of the principal from any cause, would the assistant be allowed to carry on the practice for an indefinite period, or is a certain length of time provided for? In most of the cantonal laws, no provision is made for this eventuality. In the canton of Zurich one year is allowed.

How many recognized American practitioners are there in Switzerland? There are 327 dentists in Switzerland, and about 50 to 75 "American dentists" among them, but only 4 Americans.

How many assistants? Impossible to ascertain, but probably about two Americans.

How many practitioners and assistants calling themselves "American dentists" are practising here? Number unknown.

Is it the general practice for them to style themselves "American dentists" without having passed an examination at an American dental college? No; formerly some men had "fake diplomas," bought in America and elsewhere, but they were prosecuted.

What are the usual charges of American dentists in Switzerland, and how do they compare with the charges made at home?

Examination	$1.00 to $3.00
Plastic fillings	2.00 to 5.00
Nerve treatment, per sitting	1.00 to 2.00
Gold fillings	5.00 to 20.00
Crowns	each 15.00 to 40.00
Bridge work, per tooth	15.00 to 30.00

These average charges are higher than those of most first-class dentists in America.

In your opinion does Switzerland present a good field for a bright American dentist who would like to spend a few years abroad, or is the profession already overcrowded here?

There is always room at the top of a ladder, and Switzerland is not any more overcrowded than America. An American who wishes to spend a few years here, can only do so by becoming an assistant to some good dentist.

The provision of the federal law upon the subject of the examination of dentists is as follows:

Examination of Dentists

The examination of dentists is divided into three different parts.

Article 46.—(1) Examination in the natural sciences; (2) Anatomical-physiological examination; (3) Practical examination in the different branches of dentistry.

In order to be admitted to examination in the natural sciences, the candidate has to bring: (a) A certificate of "maturity" (which is equal to an American high-school diploma); (b) a certificate of having attended theoretical lectures on: physics; inorganic chemistry; organic chemistry; botany; zoology; comparative anatomy. (c) A certificate of exercises in the chemical laboratory in qualitative analysis, and the elements of quantitative analysis.

Article 47.—The examination in the natural sciences is oral, and comprises: physics; inorganic and organic chemistry; botany; zoology and comparative anatomy.

Dentists' Anatomical-Physiological Examination

Article 63.—In order to be admitted to this examination, the candidate must bring: Proof of having passed the above named examination; a testimonial of attendance at the following lectures: anatomy; histology; embryology; physiology. A certificate of attendance at the following practical courses: Exercises in preparing muscles, vessels, nerves of the head and neck; exercises in the use of the microscope.

Article 64.—The anatomical-physiological examination is oral and comprises: anatomy; histology; physiology, with special regard to dentistry. A note is given for every branch.

Dentists' Examination in Their Special Branch

Article 65.—Candidates who wish to pass this examination have to bring: Proof of having successfully passed the anatomical-physiological examination for surgeons or dentists, and a certificate of having attended the following lectures: On general pathology and pathological anatomy; general surgery; special pathology and therapeutics of the oral cavity. Also certificates of attendance at the following hospitals: Surgical (two half years); at a dentist's (two half years); a certificate of having worked in a mechanical laboratory during three half years; a certificate of having worked three half years at the dental chair, especially with different methods for filling teeth.

Article 66.—The dentist's special examination is both practical and oral.

Article 67.—The practical examination requires: The written answers to two questions drawn by lot on any branch of the science of dentistry; examination and diagnosis of one or two patients with morbid affections of the mouth. The examiner can order the candidate to undertake necessary operations at once; the filling of two decayed teeth. One of these fillings must be made with gold; the making and articulating of a denture. The candidate may choose the materials. The patient may also be chosen by him.

Article 68.—The oral examination comprises the following branches: Special pathological anatomy of the oral cavity and organs of mastication, with regard to general pathological anatomy; hygiene of the mouth and therapeutics of the oral cavity with reference to materia medica and narcosis.

Article 87.—It is further provided in article 87 that those entitled to practise in Switzerland without passing an examination are: Those persons who have a diploma from a foreign university allowing them to practise in that country, if a treaty with that state stipulates reciprocity. In exceptional cases it depends on the advisers to say, upon the given proofs, on what condition a diploma will be granted.

In the cantons of Glarus and Appenzell-am-Rhodes anybody is permitted to practise all branches of medicine without a diploma, and in the canton of Geneva anyone having passed the dental examination at the University of Geneva is given a diploma which entitles him to practise in that canton only.

From the foregoing it will be seen that the theoretical knowledge required of a graduate in dentistry compares favorably with the requirements in the United States; but it is the general opinion of dentists capable of judging that the poorest American dental college teaches its students more of practical value than the best here, and dental schools on the continent give their students only scant opportunity to become good gold-fillers and crown and bridge workers.

It will also be seen that the requirements of the Swiss laws and regulations are such that to become a regular recognized practitioner would not only be extremely difficult for a foreigner, but would consume far more time than anyone would care to give.

The question, however, of becoming an assistant to a recognized practitioner is worthy of consideration. From a careful review of the different cantonal laws I find that, while these differ in unessential points, none requires that an examination be passed by an assistant, and it is only a question of obtaining the consent of the local authorities, which is usually granted. It is not necessary that the applicant should speak any special language. Of such American assistants there are already a

few in Switzerland, and the profits of the business are usually divided between the parties in interest according to the agreement between them.

The cities offering the best inducements would be Lucerne, Basel, Geneva, St. Gall, Lausanne, Berne, and Fribourg.

Resolutions on Personnel of Hospitals

The following resolutions were passed by the National Dental Association at the meeting in Boston, Mass.:

Resolved, That in the standardization of hospitals the personnel of the staff should include a competent dentist, whose duties should include consultation with the attending physician and aid in diagnosis by locating the source of focal infection in the mouth; and be it

Resolved, That such dental member of the hospital staff should insist on thorough use of the X-ray for locating diseased teeth and pyorrhea pockets, and that he should be trained in the correct interpretation of dental radiographs and that the interpretation of such radiographs be made preferably by the dental member of the staff; and that such dental member should supervise the instruction to nurses in the preparation of patients' mouths for operations and in the general oral hygiene for patients; and that he take care of any dental operations; and that a dental engine and other necessary instruments and apparatus for emergency operations of all kinds be provided. Be it further

Resolved, That it is the sense of this Association that the suggestions made and the policy outlined in these resolutions be adopted as the future policy of the Association; and that it be earnestly requested that hospital staffs be so constituted that the fullest cooperation may be had between the physicians and dentists in the diagnosis and treatment of cases.

ARTHUR E. SMITH, *Chairman,* Chicago, Ill.
WM. H. G. LOGAN, Chicago, Ill.
C. EDMUND KELLS, New Orleans, La.
C. R. LAWRENCE, Enid, Okla.

Public School Dental Clinics

We should like to be placed on the mailing list of Directors of Public School Clinics and would appreciate any information regarding their work—copies of record systems, etc.

We are particularly interested in the educational methods employed, and will be glad to exchange information at any time.

F. C. BRUSH, D.D.S.,
Dental Director.

Montclair Dental Clinic,
School Administration Building,
Montclair, New Jersey.

Ethical Parables

Number 10

By George Wood Clapp, D.D.S., New York

In the tenth office, the philosopher had to await the dentist's coming.

"I've just gotten back from our state meeting," said he, "and can give you a few moments.

"Oh, yes, I go to all the important meetings and save a little time each week for professional books and magazines. You see I charge my patients for something more than I actually do in their mouths. I make myself responsible for keeping up with the more important advances in those portions of dentistry which I practise, so that when they are in need of advice I can offer them the latest and best. My regular patients know this and appreciate it. They send me others who appreciate it also.

"For some years I didn't do this. I could not seem to afford the time or money for the State Society or any local societies, and time for reading was unknown except when I was too tired to understand what I read. My knowledge dwindled, my skill retrograded and I got in a very bad way.

"One year I turned over a new leaf. I put on my door a note reading, 'I'm gathering knowledge for you at the State Dental Society meeting'. It happened that I got two or three things there which proved extremely useful in the following months and produced bigger fees than I had ever received before.

"I couldn't change now. I feel that the interests of every one of my patients are in my keeping. They don't want to bother with dental knowledge, but they pay me to have it always ready against their need. If I shirked I should betray their confidence and destroy the relations which are the sources of pride and pleasure in professional life."

Tenth of a Series of Twelve Parables

Solving the Problems of "B"

By Dr. M. D. K. Bremner, Chicago, Ill.

"B." is a dentist thirty-five years old, with a wife and two children. Some of the five thousand neighbors amongst whom he lives are willing to let him take care of their teeth. In return for these services he is receiving three thousand dollars per year net above office expenses.

The difficulty that confronts "B." is how to manage on this three thousand dollar income, to live comfortably and, at the same time, provide against disability in sickness and old age; also, should he die before the children have matured, the burden of their care shall not bear too heavily upon the weak shoulders of his good wife.

Some one may suggest, of course, that "B." should increase his income by charging more; that he should become a better salesman and better business man; that he should learn more about the cost and value of his time. All of this advice is excellent and will, I am sure, help "B." a great deal. There is no reason whatever why "B.", the individual, should not earn more. Indeed, there are many solutions which offer themselves to "B.", in the singular.

He can raise his fees. He may have a rich father-in-law, or, he may possess sublime faith in an all-wise providence that will somehow provide, and these problems, as far as he is concerned, do not exist. "B." may even quit dentistry and go into some more profitable line.

However, my purpose here is to deal with "B." in the plural, representing a type, and, as a type, "B." belongs in the three thousand dollar class, and will, in all probability, remain there for the rest of his natural life. "B." in the mass, cannot or will not take our advice about increasing his fees. He has no wealthy relatives to whose demise he can look forward as a release from the troubles that beset him and while talking glibly about providence, he has learned during the thirty-five years upon this earth the value of "keeping his powder dry." Experience long ago has taught him that only those are helped who help themselves. At the same time, "B." is a decent sort who takes his responsibilities seriously.

Therefore, the problem with him is how to get along on what he makes. I think it can be done, and I shall attempt to outline a plan which, if followed, will, in my opinion, enable "B.", whose real and full name is Dr. Big Average, to "carry on" with the income at his disposal so that he will have a certain sense of security and the satisfaction that he is doing the best possible for himself and for his family.

There are four distinct liabilities that "B." must discharge with the three thousand dollars. First, he must live—some may suggest the word "exist" as a more appropriate term, and to humor them, I shall accept the suggestion. "B." and his family must exist. Second, this

existence must continue even if "B." should get hurt in an automobile accident (by another fellow's machine while walking across the street), infect a finger or be taken ill with pneumonia. Third, in case he dies at an early age, his wife and children must be protected against want. And, fourth, some provision must be made for "a rainy day."

The continuation of "B.'s" income during disability, resulting from either accident or disease, is of prime importance and must receive first consideration. A man dies but once, while he may be ill several times. Furthermore, the expenditures usually increase when a man is sick, and, to a family living so close to the border line of comfort, the loss of income in such a period is nothing short of a calamity.

There is only one method by which his income can be continued: through the purchase of income insurance. This class of insurance must not be confused with what is commonly known as health and accident insurance. The latter kind of protection is often carried by professional and business men and is of no value to "B." One reason is, he could not afford to buy a policy to guarantee him two hundred and fifty dollars per month indefinitely. The premium would be too high and too expensive for him. But worse than this, protection under the general run of these contracts is not secure because they are all cancellable any time at the option of the company (excepting at the time when one is either fully or partially disabled and drawing indemnity). Let me illustrate briefly how this works out:

A man recovers from some severe illness, goes to work, and the claim is paid. But the company fears that as a result of that illness he is apt to be more susceptible to similar attacks. Accordingly, they either refuse to renew the insurance, or else in order to protect themselves, special clauses are inserted in the policy exempting the company from paying for disability which may result from those diseases which, in its opinion, this man is particularly liable to. If this should happen to "B.", who, naturally, cannot out of his small earnings, save sufficient money to draw upon in a case of a serious emergency, it would mean either that the wife would have to become the bread winner, or accept aid from friends, or the poorhouse.

"B." cannot take any chances. Therefore, he must buy non-cancellable insurance so that, regardless of what happens, as long as the premiums are paid, his income is absolutely assured. Until very recently there were no policies of this type, at least not within "B.'s" means. Now, however, he can get just the very kind of contract suitable for him, and at a reasonable price. For one hundred and twelve dollars and a half a year it is possible today for a dentist to purchase a policy which will pay him two hundred and fifty dollars per month during total disability, up to the age of sixty-five years; it will pay him half this amount for partial disability during a period not exceeding six

months. In the event of disability requiring hospital treatment and residence, twenty-five per cent of the guaranteed monthly income is payable for three consecutive months even though this comes within the initial period of disability otherwise excepted from indemnity. In the event of loss of sight of one eye, by accident or disease, ten per cent of guaranteed monthly indemnity is payable for life. Loss of one limb, twenty-five per cent of guaranteed indemnity. Loss of two limbs, or sight of both eyes, by accident or disease is considered as causing permanent total disability, and the guaranteed monthly income is payable for life, and, in the event of loss of limb, limbs or sight from accident or sickness, indemnity is payable from the date of the loss, irrespective of the provision excepting an initial period of it.

There is but one exception: The insured carries his own risk for any disability that lasts one month or less. This a dentist can easily afford to carry. Most of his patients will wait for him and a week or even a month of absence from the office will not show any marked effect in the final average for the fourteen years' income. The real need for protection is in case of a long illness, or a serious accident. For such a condition the policy I have just described is the very best obtainable, and it is what "B." needs.

The next in order of importance is provision in case of death before the children reach the age when they are self-supporting. This can be done only through life insurance. The main consideration in buying life insurance is the financial strength of the company. One must feel that in five, ten or twenty years, from today, the organization to which one entrusts his funds, will still meet all its obligations. This at once rules out most of the fraternal or lodge insurance, because through lack of proper business methods, many of them become insolvent. Many a widow and orphan has been left penniless as a result of faith in the stability of a fraternal order.

"B." should buy his protection in a straight line insurance company. Most companies since the famous New York investigation are in good shape and absolutely safe, and, notwithstanding all that agents may say, they differ but slightly in the contract, or in the rates, they all use the same statistics. So it is of no consequence what company "B." selects as long as it is good and supervised by the State, as all good insurance companies are.

Now, how large a policy should "B." carry? Before giving the answer to this question, I want to clear up a notion commonly held by a great many, that life insurance is an investment, because it will make a great difference in our advice. An investment once made will grow and accumulate without any further effort on our part, but not so life insurance. Premiums must be paid until death or until the expiration of the contract, ten, fifteen or twenty years. It is true that after a

certain time one has the right to withdraw a stipulated amount of cash, but such withdrawal is not profit or interest, but merely the surplus accumulated after the expense of the insurance has been met.

Insurance is an expense combined with a saving feature. Essentially it is nothing but a gamble in which the short-lived fellows are the winners. There have been a good many high-sounding phrases written about life insurance. In my opinion, however, it is simply a stupid invention of men whereby we attempt to do the right thing in the wrong way. For whatever we may think about the fairness or unfairness of economic inequality, one thing is sure, that a dead father has no ownership nor any connection with his children. Therefore, it is absurd to punish the young and helpless for the inefficiency or improvidence of their parents. Yet, this is just what we are doing under the present plan. Those who need protection most get the least of it. The street sweeper or laborer who can save and leave but little to his dependents must also, on account of the cost, carry the smallest amount of life insurance.

But, I have digressed from my subject. As I said before, insurance is principally an expense. Every dollar paid on a policy means a sacrifice in the present; it means the denial of some want to "B." and his family.

I think he should buy insurance that will pay the family about one hundred dollars per month for ten years from the day of his death. I prefer an income to a lump sum, because with all due respect to Mrs. "B.", I do not trust her business sagacity sufficiently. Too many women lose their insurance money in a couple of years and are then left to face the world penniless. It is safer to let the company pay out in installments. There is another reason: The premium is less on the income plan.

I realize, of course, that one hundred dollars a month for a woman and two children is not enough. But, in this regard "B." is no worse off than the man who makes two or three times his income. Like him, they, in their class, also cannot afford to pay for a sufficient amount of insurance to maintain their families according to their accustomed standards.

Life goes on even after those dear to us have departed. There is no reason for assuming that Mrs. "B." is a helpless creature. She will, like most others, adjust herself somehow. In time the children will grow up and then they will help along. Meanwhile, the $100 per month will provide the necessities and keep them secure from want.

Having then decided on the amount of insurance, we must now consider the type of policy most suitable for a man in "B.'s" position. There are, generally speaking, three kinds of contracts—ordinary, limited-payment, and endowment. All of them have one factor in

common. Upon the death of the insured, his heirs receive the full value of the policy, either in one sum, or in a series of installments, according to the prescribed wish of the deceased.

The difference is that under the ordinary plan the payment of premiums continues through life; while both on the limited and on the endowment policies the premium stops automatically at the expiration of a certain definite term, fifteen, twenty or twenty-five years, when the policy-holder receives paid-up insurance for the entire amount. Under the limited plan or in case of endowment, the full value in cash, plus whatever is left from the interest and compound interest his money has earned during the time, after the cost of carrying the risk has been deducted. There are options on all of the contracts; for example, even on the ordinary policy one may withdraw a certain amount of cash or convert it into paid-up insurance. Always, however, less than the face value payable at death.

The best kind of insurance for any man with limited means is "ordinary life," because this class of policy gives more protection for less money. At "B.'s" age, a policy that will enable the wife to draw the amount I have indicated above, will cost about two hundred and thirty dollars per annum the first years, and later will decrease to just a little above two hundred dollars. The same size policy on the twenty-payment plan will require a premium almost one-third larger which is more than "B." can spare. A twenty-year endowment will cost at thirty-five years, about five hundred dollars per annum, a sum altogether beyond his reach. Of course it is true that by paying a larger premium he will be saving more money with the company, but this is just what I want to advise against. Under the insurance laws, the companies are limited in the investment of their funds to certain types of the very highest grade securities, paying usually (in normal times) between three and a half to four and a half per cent. So that after deducting the cost of doing business and other expenses, the returns received by the policy holder on the surplus cash, which is accumulated above the cost of carrying the risk, are very low (less than three per cent). "B." can do his own investing and earn six per cent on whatever little money he is able to accumulate.

Right here it will perhaps not be out of place to correct a very common error regarding the "dividends" paid by the insurance companies when the yearly premiums are collected. I think the term "dividends" is still left with us from the time when the insurance business was not as square and honest as it is today. For example, an annual premium of seventy-eight dollars and eighty cents, which I just paid, carried a "dividend" of ten dollars and ten cents. If this were actual earnings, the insurance companies would be the best places to put our money in, for this is a return of almost fifteen per cent. The real facts are that

the company, in order to make sure of not undercharging in case the death rate should for some reason increase, like during a severe epidemic, adds on a certain amount above the average calculated cost, and at the end of the year, everything being normal, this addition is rebated to the policy holders. Therefore, the dividends should really be called rebates.

Now, for the most difficult part of my plan. In addition to safeguarding his income and protecting the family in case he should die at an early age, "B." must also save some money for a "rainy day." This is no easy task when a family of four must be maintained on three thousand a year. Nevertheless, I think he better save, because, in the last analysis, it resolves itself into a question of relative values. I believe that the inconvenience caused by going without things is less than the satisfaction derived from the knowledge that in case of emergency one will not have to borrow or appeal to the generosity of friends.

There is considerable less talk about saving. We often hear it lauded as a great virtue. But this talk is sheer nonsense. Saving is no more a virtue than spending. From the moment the double-edged sword was placed in position at the entrance to the Garden of Eden, mankind has had to save just as it has had to work—there is no virtue in either. Working and saving are necessary evils and nothing more. The railroads, factories, schools, libraries and, in short, everything that makes for civilization is the result of saving. Had the people consumed all they have produced humanity would have remained in the lowest stages of savagery. However, while this is true, we cannot claim there is any pleasure in saving. As a matter of fact, excepting in the very few cases of people with big incomes, every dollar saved means a want denied, it means sacrificing the definite present for the indefinite future. In order to save, "B." and his family will have to go without certain comforts which some people may even class as necessities.

How much to save is quite a problem. Of course it would be nice if he could put away a sufficient sum so that by the time his eyes became dim and his hand unsteady he might look forward to financial independence, at least on a modest scale. But to accomplish this, the "B." family will have to forego many desires in the present, which is not a wise plan for anybody. After all, the fear is generally much greater than the reality. "B." may never get old, or he may reach old age and die suddenly.

I think $200 a month is about the right amount, and since most of us save best when we assume definite obligations, the following method is suggested which, if adhered to, will not only make the saving systematic but will also compound the money at about six per cent which is considered a good return.

I am assuming that "B." is acquainted with the banker in his town.

He will ask the banker to purchase for him a real estate mortgage bond from a reputable concern for the sum of one hundred dollars. This type of security is preferred because it does not fluctuate in value and is practically always safe. These bonds bear six per cent interest. "B." pays down whatever amount he has on hand and signs a two or three months' note for the balance, the banker keeping the bond as security. Each month thereafter he can pay twenty dollars on account of his debt and receive credit for the interest on the bond, so that when the note is cancelled, he will get a refund of interest on all the money he paid in advance of maturity. This bond is then used as collateral for the purchase of a similar bond and also paid off with the regular monthly savings. By following such a method consistently and reinvesting the interest which he receives on the bonds, "B.'s" money will double itself in about twelve and a half years. It is slow, of course, but there is the advantage of absolute safety.

The danger will arise when "B." has accumulated a thousand dollars or more. Then will come the very natural desire to speculate. The constant planning and figuring takes a good deal of joy out of life. Someone will offer him an "opportunity in oil," "right close to big production," two inches on the map from a "famous pool," and he will be tempted to stake his hard earned, and still harder saved money in the hope of gaining economic freedom, in the hope of freeing himself from the irksome task of counting every penny before it is spent. Or, some promoter may propose a pecan-nut farm, an almond grove, a citrus fruit orchard—the kind that are developed and turned over to the purchaser ready and income-bearing, and, "B." looking at the wonderful out-door scenes beautifully depicted in the illustrated prospectuses, is apt to say to himself: "Here is my chance, I will put my money in this, and in a few years I will quit dentistry altogether."

We can readily understand why "B." should want to quit. No man who earns three thousand dollars per year from the practice of dentistry can have much enthusiasm for his profession.

Space does not permit me to go into the history of the different get-rich-quick schemes, the invariable failures and the grief which sooner or later is the reward of credulous investors, but I will mention just one fact which was told to me by a man whose knowledge of conditions in the dental profession is second to none: "That unfortunate investments are the main reason for the necessity of raising the National Dental Relief Fund." In other words, dentists are "investing" themselves into poverty.

Perhaps the best investment for "B." is a home. In a small town it is often hard to find a suitable habitation. Then, too, the best people in small communities own their homes, and those who rent are rather *de classe*. But he must guard against purchasing a house that

will make his rent too high—a very common tendency among home-buyers of "B.'s" type. It is generally the wife who is at fault. Each woman wants a home that is as well appointed as those of her neighbors. This develops a certain amount of rivalry and the result is a standard which most of them cannot afford.

It will probably take some tact and persuasion on "B.'s" part to overcome the vanity of Mrs. "B." While vanity is one of the strong instincts in woman, still if "B." has had tact enough to make his wife a full and equal partner in all his affairs, he can succeed in convincing her how absurd and impractical it is to adopt other people's standards of living instead of their own.

"B.'s" rent ought not to exceed more than about one-fifth of his income. In buying a home, he should figure that the cost of maintenance, interest on his money, and on the mortgage, shall not run more than about six hundred dollars per annum, which is equivalent to fifty dollars a month for rent. On this basis they will have a rather simple and unpretentious dwelling, but probably just as comfortable as the more showy places. Here again, it is a question of relative values.

Now, when we add up our figures, we find that after deducting for saving, income, and life insurance, there is two thousand, four hundred and twelve dollars left for the "B." family to live on and keep up appearances which is no easy matter these days. But there are many others like them. There are the men teachers at the schools and colleges, a good many government employes and not a few salaried men in general. Then, of course, there are always the underpaid ministers of the Gospel—though their lot may be somewhat easier since they talk so much about the "reward hereafter" that a good many of them actually begin to believe it themselves. One thing is quite certain—wealth or a big income is not necessarily accompanied by either happiness or even contentment.

To make a success of their lives, in spite of the small income, will depend largely on Mrs. "B." and her attitude; indeed, the whole plan which I have outlined, is based on the assumption that she is the right kind and willing to help. If not, then all I can say is, "the Lord help poor 'B.'"

I have started out with the premise that "B." cannot increase his income through higher or more fees. But he can, unquestionably, increase it some by reducing the cost of doing business. "B." in the mass is very wasteful. His expenses are altogether too high, so that his three thousand dollars of net income probably represents five thousand dollars gross income. I have often seen "B." polishing his inlays at the chair with the gold-dust falling to the floor. I have seen him break up well-made bridges for the purpose of selling the scraps, when those same facings could have been sawed out from the piece and used in some

other case where they might fit. I have seen him mix up a full bowl of plaster when all he needed was enough to fill a small tray. "B." sends too much of his work over to the dental laboratory. But, why go into details? "B." spends forty per cent when, with care, he could do it on from thirty to thirty-five per cent. If he saved the difference, it would add several hundred dollars a year to his net income, and it would be the easiest money he can earn and absolutely within his control.

A Wise Decision

By "H."

It seems to me to require only one more statement to make the reader sure that this dentist has succeeded. He does not say whether or not he is gradually improving the quality of his services, coming a little nearer to a realization of his aspirations. The quiet, comfortable tone of the letter makes one feel that he is. If that is so, surely this dentist is succeeding.—(EDITOR.)

My boyhood was spent in the country. I never thought that I should care to live in the city, so after graduating, I decided to practice in the country. I located in a village of about 1,000 inhabitants in New York, but in the midst of a good farming region. When graduated I was financially broke. I borrowed money to buy my equipment and a very limited equipment it was. Things came slowly. I used to get very discouraged, yet by careful planning I managed to get a little ahead. After two years I married. Soon after my practice came to about a standstill. I knew I was turning out good work, but I had too many idle hours, and with increased expenses in my home I had to do something. We decided to move. We settled in a village not very far distant. A dentist had just left there. He didn't seem to make a go of it. But with the railroad facilities, good roads and trolley I believed I could make good. So we moved there. I rented an office and things came my way (and are still coming). After two years my landlord raised the rent. By this time I had confidence in my ability, my practice was growing steadily and my wife and I decided that we would buy an office or go to the city. The call of the city was strong, the larger possibilities, fees, etc. We felt sure of success if we went. On the other hand would it be worth while? Our life in the country was pleasant, living less than two miles from Lake Erie, where we go bathing, fishing, etc. The fresh air, cheaper living, and our children's youth to be spent in the country. We decided to stay. So we bought a home large enough to accommodate both office and family. We have one of the best homes in the village, also some money saved up for the years when we cannot work. In the summer we take a two weeks' vacation.

also days off frequently. My appointment book is well filled, my office and equipment are up to date, my children have a large and pleasant lawn on which to play. We have never been sorry of our decision to stay in the country.

"Good Old Dad"

By —— ——.

In the absence of qualifying statements we will presume that Dr. B. has lived from hand to mouth and has no surplus laid away for the proverbial rainy day. In other words, that his bank account at the end of the month is exhausted.

From personal experience I believe that he can procure a comfortable nest-egg by the time he reaches the age of 55, and if he dies at the age of 55 can leave an estate large enough to support his wife presuming that his children will be self-supporting at that age.

Economic responsibilities placed upon him by his wife and children should demand that he own a modest home, provide for moderate social activity (which will not amount to very much in a town of 5,000), life insurance enough to support his wife and enable her to give at least a high school education to the children in case he should die before he acquires a competence.

No man can be called successful who does not own his own home. He should not wait until he has all of the cash to procure a home. He can save a few hundred dollars and pay the balance like rent, and this is the beginning of his competence, for it will teach him to save. If he is in debt he will buy less gold bricks, etc.

A man has no moral right to be in a position so that in case he should die his family would feel the sting of poverty or his wife feel the degradation of having to take in washing in order to keep the wolf from the door. Life insurance is too cheap; let the risk company take the chances, that is their business. If he dies leaving his wife in want of the necessities of life he certainly was not a success.

Let me suggest a plan for Dr. B. to acquire a success in life. His monthly net income is $250. On the first of every month he could deposit a time certificate for $75. $150 per year will purchase $10,000 (ten-year term) insurance, taking another $12.50 per month. Rent in a town of 5,000 should not cost more than $400 per annum, calling for another $33.50, which will leave him $130.50 to meet grocery bills, fuel, light, clothing, etc. Of course he will have to do without some things he would like to have.

At the end of the first year he would have $900, enough for the first payment on a home costing say $4,500. The mortgage of $3,600 could

be reduced the second year to $3,000, using the $400 saved in rent to pay interest, taxes, insurance, and to pay for minor repair bills. The second year interest would be reduced $40 (8 per cent interest). This is figuring paying $50 per month on the principal, decreasing a like amount every succeeding year until the home was paid for, which would be in 6 years, paying $50 monthly on the principal, but probably would be paid 10 months before that time on account of the decreased interest charges and the desire a person naturally has to pay off debts, helping him to make a few additional monthly payments before they became due. Now, approximately, at the age 41 he owns a home. He can save his $400 yearly rent and in addition $50 per month, which will amount to $1,000 per year. Investing this in government or municipal tax-free bonds, buying the bonds on credit, or at least going in debt for one-half of each bond. This will prevent him having a few hundred dollars on hand to give to the smooth-tongued guy selling automobile stock for concerns desiring to manufacture cars to supply the demand created by the cannibals of the South Sea Islands. When bond No. 1 is paid for it may be deposited as security for another bond, always returning bond interest in on the purchase price of new securities. At age 45 he should own his home and $4,300 in bonds. Now he must renew his 10-year term life insurance. He is worth at this time, not figuring any increase in value of real estate, $8,800. During the next ten years he should be able to save and invest $15,673.75 (approximately) provided he turns back his bond interest into interest-bearing securities (not oil leases). Or at the age of 45 he could buy a piece of land which should return him 4 per cent on the investment and cumulative value of 4 per cent. Any plan is O. K. so long as he sticks to real securities, such as land or bonds. Now he can die, and people will not have to say, "Poor Dr. B.; he worked hard but died flat broke," or he can afford to live and have the rheumatism and stay away from the office and not worry about next month's rent and grocery bills. Success in old age for a dentist means contentment, knowledge of service well performed to both his patients and to his family, and service to his family means leaving enough in case he is called to that undiscovered country from whose bourne no traveler returns. Then the mother and kids may say, "Good old Dad, may he rest in peace," instead of having to worry about how to meet the funeral expense.

PRACTICAL HINTS

This department is in charge of Dr. V. C. Smedley, 604 California Bldg., Denver, Colo. To avoid unnecessary delay, Hints, Questions and Answers should be sent direct to him.

Sprues for Cast Work.—Used Victrola needles (steel) make excellent sprues for cast work. If the needles are too small for the holder grind hole larger in sprue holder, fill with soft wax and you have a multiple former.

A. H. Stith, D.D.S.

Note.—Victrola needles are all right as sprue formers if you attach the large end to your model imbedding the small end in the crucible former at least to the point where the taper ceases so that your sprue hole, when the needle has been pulled out, is parallel throughout. There is no advantage in a tapering sprue hole as the gold can flow into the mold only as fast as the smallest diameter will permit. If the inlay is small enough to permit a sprue opening smaller than the large diameter of a Victrola needle, a smaller wire should be used, in which case there is less danger of a little melted gold dropping into the sprue before the pressure is applied, thus preventing a perfect casting.—V. C. S.

Editor Practical Hints:

In reply to an inquiry by Dr. F. C. Secor regarding the discoloration of gold in the mouth, published in the Dental Digest I will say that I have observed the same thing in one or two cases that were particularly marked—in others only slightly noticeable.

I believe the cause to be some derangement of the digestive function whereby hydrogen sulphide, in small quantities, is generated in the stomach or other parts of the alimentary tract.

As to what to do to correct said condition I would refer the case to a physician, believing, as I do, that it is a constitutional and not a local trouble.

S. F. Heverly.

Editor Practical Hints:

I have two young lady patients who have a small gum irritation, not pyorrhea, in fact it is just a simple gingivitis, and yields very

readily to treatment, but is complicated in one case by the gradual protrusion of the right central incisor and the right lateral (uppers in both cases). This protrusion in both cases was about of six months standing. Now, after treating the gingivitis in one case I placed an orthodontic appliance on the tooth and am succeeding very nicely in returning the tooth that protrudes to its natural position. The question is, when it arrives at that stage how long will I have to hold it there, or will it ever remain in the natural position when I do get it there, and is this the right procedure in cases of this kind? Extraction is very strenuously opposed in both cases, and I hardly feel that it is the thing to do myself. Would appreciate your advice.—H. E. W.

Answer.—I do not know that I can answer your questions satisfactorily, but will publish same and perhaps some other reader can do better. My guess without being able to examine the mouths would be that the protrusion is very likely caused by the force of occlusion. If this is the case, drawing them back into position will not be permanently corrective without grinding to relieve the traumatic stress. I have frequently seen this sort of thing from deep, tight pyorrhea pockets that may not be discovered without exploring around the tooth beneath the free margin of the gum with a thin, blunt instrument. If this is the cause, or no matter what the cause may be, unless it was faulty occlusion which you have corrected by grinding, I do not think the teeth will remain in their correct position without being retained with a permanent splint; for it stands to reason that unless you have discovered and corrected the cause you cannot expect a process not to repeat itself unless prevented by a restraining force.—V. C. S.

Editor Practical Hints:

In a recent number of Dental Digest you advised the addition of resin to a batch of wax to stiffen it; this was of great interest to me, as I made up a batch of wax from scraps and some new beeswax, using the bottle filled with cold water method; I used one-third paraffine and two-thirds wax, but find that while it is fine in cool weather it is entirely too soft for summer use.

Will you kindly advise me about what *proportion* of resin to use, either by quantity or weight, to make a stiff or firm enough wax that will not "crawl" in use in warm weather.—G. E. S.

Answer.—I cannot give you exact proportions. Experiment with a small batch with both resin and gum dumar until you get the consistency you prefer. I cannot tell what your scrap wax contained, what temperature you are working in or what working qualities you desire.

V. C. S.

Editor Practical Hints:

I know you will help me out if possible. I find myself in an embarrassing position, occasioned by ignorance concerning crowns, strange as it may seem after twelve years of practice.

A friend of mine heard a conversation between a prominent dentist and his patient regarding aluminum-lined thimble crowns, which were suggested as the only possible thing to use in the particular case.

Having to admit that I never heard of such a crown, I feel it wise to ask your help. My impression is that a seamless gold-shell crown is referred to as a "thimble" crown. I am not aware that such crowns are lined in any way, nor can I imagine why they should be, if they are, lined with aluminum. Can it be possible that any reputable dentist would misrepresent things in order to receive a larger fee for his services? "Reinforced" crowns would not be considered "lined," would they? If so, how are gold crowns reinforced with aluminum, and what would be the advantage over a soldered reinforced crown?—A. D. H.

ANSWER.—Your confession of ignorance is not, in this instance, an admission on your part of an inability to practise dentistry intelligently. I think as you do, that there is no such thing as an aluminum-lined thimble crown. To fortify my opinion, I asked Mr. L. D. Hurst, owner of the largest, the oldest and the most up-to-date laboratory in Denver, if he had ever seen one, and he had not.

I would not, however, if I were you, think too hard of the prominent dentist in question; for it is the easiest thing in the world for a dentist to be misunderstood or misquoted, especially if he is being quoted by a layman. If this dentist is in your vicinity, I should advise you to go to him, tell him what you heard, and give him a chance to express himself on the subject. If you cannot see him personally, write to him.

V. C. S.

Editor Practical Hints:

The inlays as made by the methods of the Denver Unit are such that I am using your methods with most gratifying results.

There is one question often asked which I cannot answer. Your method of casting differs from Taggert to the extent that you take the air from a gallon container where it has been reduced to five pounds instead of direct from the reducer. Why is this a better method?

L. C. BURGARD.

ANSWER.—The reason we pass our compressed air through the air tank (it does not matter whether the container is of exactly a gallon capacity) is to provide a uniform pressure. Some steam pressure is produced by the contact of the moistened asbestos valve with the top of the flask which might produce an excessive pressure were it not for the air tank, which acts as an equalizer for same.—V. C. S.

CORRESPONDENCE

Editor DENTAL DIGEST:

In January issue of DENTAL DIGEST a brother dentist, "S," complained about loss suffered on account of some of his patients—ex-soldiers—being sent to another dentist appointed by the Government. This dentist advised the ex-soldiers to have him attend to their mouths, and then sends a bill to the Government for this work.

I am of the same opinion as "S," that this proceeding is not fair to the other dentists. I am a victim in the same way, having lost my patients who were ex-soldiers. In my locality are two young dentists appointed by the War Risk Bureau, and the same thing happens here that "S" complains about.

During the war I did free dentistry for the boys who were called in the Draft. I was a member of the Preparedness League of American Dentists and the chairman used to send them to me and other dentists. We used a considerable amount of our own time and material without getting any pay for them. We did not ask for pay because it was understood that the members of the League would do the work free, and I was glad to do my part so long as I could not be drafted to serve in the army, having a large family depending upon me.

But speaking of fairness why should only two dentists be appointed to do this work? Why not leave it to the free will of the ex-soldiers to go to their own dentist or anyone they might prefer to do their work?

Wouldn't this be better and more of a square deal to all? Can anything be done about it officially?

P.

Our Country

Sail on, O Union, strong and great:
Humanity, with all its fears,
With all the hopes of future years
Is hanging breathless on thy fate.

Our hearts, our hopes, are all with thee;
Our hearts, our hopes, our prayers, our tears,
Our faith triumphant o'er our fears
Are all with thee—are all with thee!

A Japanese Office Boy Writes

(From Bulletin of Illinois State Dental Association)

Even if this hits you (which it is quite apt to do) you will like it. Like a sugar-coated pill it will do you good—pleasantly.—(EDITOR.)

Mr. Editor of Small but Helpless Magazine of Toothsome Tendencies. Somewhat Honorable Sir:

Recently I have absorbed one complete course, by correspondence, of English decomposition and letter write.

Wonders of U. S. Postal Service enables such results to become possible in land of terribly free and occasionally brave.

For payments of cash money made at outgoing window of P. O. all having slight traces of intelligence can be safely instructed by means of portable education administered by collapsible professors from entirely safe distance of remote city.

Having recently completed all Money Orders, Mr. Editor, I now possess delicious abilities to express thoughts occurring in brains or elsewhere in approximate English and so similarly to all newly arrived Americans I hasten to news print wherever possible. Thank you.

Natural comeback for you of Dental Magazine Editorship is "Why pick on me?"

Reasons are as following:

Considerable jobs and other light occupations recently indulged in by me has occurred in offices infested mainly by Dentists and other high-binders and even Japanese Office Boy has brains of sufficient intensity to observe unfortunate happenings which frequently occurs amid busy surroundings.

Some of these will perhaps be elucidated:

1. Why will tooth remover, with state license to do it, place in fastidious patient's mouth before turning on gas jag, one mouth prop of rubber or cork construction, having tied to it dingy string of deceased appearance of shoe laces that enjoyed hunting trip in 1908? Smart retort for all men doing so is "All strings and other etc. are completely sterilized and boiled until tender." Highly important when true I reverberate, but why not have strings that really *look* clean even while being so? For ¼ $, Mr. Editor, can be purchased entirely white string of sufficient length to pull up 278 mouth props after they had gone down longest necks in U. S. A. or other World Suburbs. Then why not? Kindly minimize answers as much as possible.

2. Why will ambidextrous tooth tormentor insist on placing Dams composed of rubber and profane language over helpless teeth when cotton rolls of entire whiteness will accomplish same purpose in many cases

in ⅛ elapsed time while also allowing chair victims to completely retain all Christian expressions formerly used during operations of open faced nature? Answers should be tabulated when convenient.

3. Why will instances frequently occur where dentists of apparently rational tendencies will install delightful office equipment of totally sterile appearance and yet personally administer all treatments and examinations with fingers having cigarette formations in color resembling localized jaundice and odors similar to hired man who has just come in from manicuring cows and other farm products and has been standing close to highly inflamed stove of red hot appearances?

I shall doubtless be exhausted by your replies when received.

Other delinquencies of dentists who practice them has also been noticed, Mr. Editor, but strained state of mentality required for voluptuous expressions of letter communication are no longer possible at present.

Hoping you are the same,

Yours if necessary,

TOGO.

Resolutions on Death of Dr. Shaddock

Dr. Alfred Cole Shaddock passed from this life on December 6, 1920, at his home, 564 Monroe Ave., Rochester, N. Y.

Dr. Shaddock was born June 30, 1882. He received his early education in the Rochester Public Schools. Was graduated from the Rochester Free Academy and entered the University of Pennsylvania, graduating with the class of 1907. He was a member of the Xi Psi Phi Fraternity, and of the Rochester Dental Society, and

Whereas, Dr. Shaddock was an active member of the Monroe Ave. Methodist Church, a reader and student of literature and a connoisseur of Art, be it

Resolved, That we, the members of the Rochester Dental Society, do record our deep sense of loss which the Dental Profession and this Society have sustained; and be it further

Resolved, That we extend to the family our heartfelt sympathy, and that these resolutions be spread on the minutes and be published in the Dental Journals, and that copies be sent to the family of our departed member.

Committee HOWARD F. LEWIS, *Chairman,*
J. A. GAFFNEY,
F. N. LEICHT.

If

If I had a master's gift to sing
I would make songs of everything;
Not only songs of star and tree,
And things of wonder, plain to see,
But songs that show that all is fair,
And beauty blossoms everywhere.

There's loveliness in jewelled rain
As well as skies of amber stain;
To him who hears, the towered street
As any singing glade is sweet.
It only takes a master's light
To make all things with beauty bright!

EXTRACTIONS

Knowledge is never too dear.

You can't save much time by stopping your watch.

Once there was a man who tried to open an oyster with prayer.

Our best friends often desert us as we grow old—our teeth for example.

No woman on her way to buy a new hat was ever known to commit suicide.

A monarchy is as rotten as the king and his crowd and a democracy is as punk as all the people.

(Definition of a pie)—Two crusts of indigestibility, separated by a layer of cholera morbus.

It is beginning to look as though we would prefer to keep the tax and let the government take the income.

We know a lot of men who could make more money for themselves if they didn't waste so much time worrying over Rockefeller's money.

Blindness due to drinking wood alcohol is increasing. The man who says he's going out to get "blind drunk" these days may be telling the truth.

(Patient)—Doctor, will my appendix be put in alcohol?
(Doctor)—No; there's enough alcohol in it already.

"Is Mr. Smith in?" asked the visitor of the office boy.
"No, ma'am."
"Can I wait for him?" asked the lady.
"Yes, ma'am, you can wait for him if you like," answered the boy. "But he's been dead for a month."

If the world war had lasted another year, someone would have sold the Atlantic Ocean, Pike's Peak and probably the North Pole to the Shipping Board.

(He)—Hello, Kid!
(She)—How dare you speak to me? I don't know you from Adam.
(He)—You ought to. I'm dressed differently.

It will be a genuine pleasure some time in the future to eat a beefsteak without feeling that we are taking something away from starving Europe and breaking the heart of the world.

"I really believe I'm in luck this time. My new maid is a perfect treasure—clean, energetic, economical, easily managed and capable as can be."
"Ah! And how long have you had her?"
"She's coming to-morrow."

When icy blasts and whirling flakes
Beset you in the street,
Remember that it's good for you
To face the hail and sleet.

Physicians and hygienists, too,
Indorse these things I preach.
But if you want my word for it,
Address me at Palm Beach.

(Article X politician)—Aren't you afraid America will become isolated?
(Farmer Corntossel)—Not if us farmers continue raising things the world needs. The feller that rings the dinner bell never runs much risk of bein' lonesome.

"Have you ever appeared as a witness in a suit before?" asked the wild-eyed, bully-ragging attorney for the prosecution.
"Why, of course I have," replied the timid young lady on the witness stand.
"What suit was it?" roared the lawyer.
"It was a blue suit, with a white collar and white cuffs and pearl buttons all down the back and everything!"

DIETETICS and HEALTH

Life

The mere lapse of years is not life. To eat and drink and sleep, to be exposed to darkness and the light, to pace around in the mill of habit, this is not life. Knowledge, truth, love, beauty, goodness, faith, alone can give vitality to the mechanism of existence. The life of mirth that vibrates through the heart; the tears that freshen the dry wastes within; the music that brings childhood back; the prayer that calls the future near; the doubt which makes us meditate; the death which startles us with mystery; the hardship which forces us to struggle; the anxiety that ends in trust, are the true nourishment of our natural being.

Dr. Mayo's Prediction

The prediction that ten years will certainly be added to the length of human life in the next twenty years was made by Dr. William J. Mayo, of Rochester, Minn., in his inaugural address to the Clinical Congress of the American College of Surgeons.

Dr. Mayo said that the best hope of the future for the solution of social and economic problems lies in the work of the medical profession, and that with present knowledge and present conditions fifteen years might be added to the average life time in this country.

It is certain that ten years will be added, at the most productive age, from a standpoint of industry, and will greatly aid in maintaining our position as the most productive nation.

Dr. Mayo discussed the treatment of cancer, which he designated as the "arch enemy of middle life and beyond," and said that one woman in nine and one man in thirteen dies with that disease.

One of its chief underlying causes is chronic irritation, and whenever a certain type of cancer exists in a race of men or appears in a country with great frequency as compared with other races or countries, it is due to a single cause, usually a social condition. Good dentistry has eliminated a percentage of cancers of the jaw due to the irritation of defective teeth. Thirty per cent of all cancers in men and 21 per cent in women are in the stomach, and Dr. Mayo said that they

probably originated from the irritation produced by the influence of drinks too hot to be held comfortably in the mouth. He said that the increase in the habit of smoking may have a relation to the increase in cancers of the lip and tongue.

How to Avoid Respiratory Diseases

The Surgeon General of the army recently issued the following rules to the public to safeguard against the spread of respiratory diseases:

1. Avoid needless crowding—influenza is a crowd disease.
2. Smother your coughs and sneezes—others do not want the germs which you would throw away.
3. Your nose, not your mouth, was made to breathe through—get the habit.
4. Remember the three C's—a clean mouth, clean skin, and clean clothes.
5. Try to keep cool when you walk and warm when you ride and sleep.
6. Open the windows—always at home at night; at the office when practicable.
7. Food will build healthy tissue if you give it a chance—help by choosing and chewing your food well.
8. Your fate may be in your own hands—wash your hands before eating.
9. Don't let the waste products of digestion accumulate—drink a glass or two of water on getting up.
10. Don't use a napkin, towel, spoon, fork, glass, or cup which has been used by another person and not washed.
11. Avoid tight clothes, tight shoes, tight gloves—seek to make nature your ally—not your prisoner.
12. When the air is pure breathe all of it you can—breathe deeply.

The Flu

When your back is broke and your eyes are blurred
And your shin bones knock and your tongue is furred,
And your tonsils squeak and your hair gets dry
And you're doggone sure that you're going to die,
But you're afraid you won't and you're afraid you will—
Just drag to bed and have your chill
And pray the Lord to see you thru—
For you've got the Flu, boy,
You've got the Flu.

A Bridge That Caused (?) Insanity

After twelve years of confinement in the Wauwatosa Hospital for Mental Diseases at Milwaukee, a woman's sanity was restored by the decay of three anchor teeth that held a heavy gold bridge in place.

This bridge fell from the woman's mouth unexpectedly, and immediately such a marked improvement in her mental condition was noticed, Dr. W. F. Beutler, superintendent of the institution said, that she has been released. Hospital officials are convinced that, in spite of the short time she was under observation the cure will be permanent.

"For twelve years," said Dr. Beutler, "this woman was confined in the disturbed ward because of her tendency to become violent. There was at no time improvement, indeed she gradually grew worse and gave the guards constant trouble. From the moment the heavy bridge fell from her mouth, however, her mind began to clear."

Dentists have shown an extreme interest in the case and for the most part explain the woman's return to sanity as due to the draining of poison from the sinuses of the face, which the bridge had prevented. They recalled other instances in which sanity had been restored by extracting a tooth to permit drainage of an infection, but none in which the obstruction was caused by the pressure of a bridge upon the roof of the mouth.—N. Y. WORLD.

Faith Cure

A young doctor recently took a young lady to the opera. The curtain was late in rising, and the girl complained of feeling faint. The doctor took something from his pocket and said:

"Here, keep this in your mouth; but be sure and don't swallow it."

She placed the tablet upon her tongue and turned it over and over, but it would not dissolve. She felt better, however, and after a while she took the tablet from her mouth and slipped it into her glove; she was curious to examine, when she was once more in the light, the tasteless substance that had given her such relief.

After they had left the opera house the girl stopped under an electric street light and, unbuttoning her glove, said:

"That tablet you gave me made me feel ever so much better." She bent over something white and round in her hand, looked up at the doctor and stammered, "D-Dick! Why, it's only a pearl button!"

United States Civil-Service Examinations.

DENTAL REFEREE, $3,600 TO $4,000 A YEAR.
ASSISTANT DENTAL REFEREE, $3,000 A YEAR.

Applications Will Be Rated As Received Until May 3, 1921.

The United States Civil Service Commission announces open competitive examinations for the positions listed above. Vacancies in the Bureau of War Risk Insurance, Washington, D. C., at the salaries indicated, and in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from these examinations, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

The entrance salary within the range stated for the position of dental referee will depend upon the qualifications of the appointee as shown in the examination.

Citizenship and sex.—All citizens of the United States who meet the requirements, both men and women, may enter these examinations; appointing officers, however, have the legal right to specify the sex desired in requesting certification of eligibles.

On account of the needs of the service, papers will be rated as received, and certification made as the needs of the service require. In the absence of further notice applications for these examinations will be received by the Commission at Washington, D. C., until the hour of closing business on May 3, 1921. If sufficient eligibles are obtained the receipt of applications may be closed before that date, of which due notice will be given.

Duties.—The duties of dental referee will consist of examining case files and making disability ratings based upon medical and dental evidence contained in reports of physical and dental examinations obtained from medical and dental officers in the field, answering correspondence relative to claimants, and performing routine work connected with the medical and dental aspect of claimants.

The duties of assistant dental referee will consist of passing dental opinions and making disability ratings based upon the evidence in the case files.

Education and experience.—Applicants must have been graduated from a dental school of recognized standing and have had, subsequent to such graduation, for the position of dental referee, at least three years of active practice, and for the position of assistant dental referee, at least two years of active practice.

Additional credit will be given for experience as a dental surgeon with the Army, Navy, or United States Public Health Service, or in practice involving special experience along the lines of duties mentioned above.

Age.—Applicants must not have reached their seventieth birthday on the date of making oath to the application. At the request of the department making appointment certification will be made of eligibles who are within reasonable age limits.

Applications.—Applicants should at once apply for Form 1312, stating the title of the examination desired to the Civil Service Commission, Washington, D. C.; the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La., Honolulu, Hawaii; Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Calif.; Old Customhouse, St. Louis, Mo.; Administration Building, Balboa Heights, Canal Zone; or to the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

Applications should be properly executed, *including the medical certificate*, and filed with the Civil Service Commission, Washington, D. C., without delay.

FUTURE EVENTS

THE MASSACHUSETTS BOARD OF DENTAL EXAMINERS will hold a meeting for examination of candidates on March 14, 15, 16, and 17, at Harvard Dental School, Longwood Avenue, Boston, Mass. All applications must be filed with the Secretary at least 10 days before examination.

For further particulars, applications, etc., address the Secretary, Massachusetts Board of Dental Examiners.

J. N. CARRIERE, D.D.S.,
352 Main St., Fitchburg, Mass.

The next regular meeting of the CONNECTICUT STATE ASSOCIATION will be held at Waterbury, Conn., on April 21, 22, 23, 1921. Headquarters at Hotel Elton. A programme of interest is being prepared.

CLESSON F. GIBBS, *Secretary.*

THE AMERICAN SOCIETY OF ORTHODONTISTS will hold its twentieth annual meeting at the Hotel Ambassador, in Atlantic City, on April 27, 28, 29, and 30, 1921. A cordial invitation to attend this meeting is extended to all interested in Orthodontia.

RALPH WALDRON, *Sec'y-Treas.,*
549 High St., Newark, N. J.

The next Annual Meeting of the KENTUCKY STATE DENTAL ASSOCIATION will be held in Louisville, Ky., April 13, 14, 15, 1921, Seelbach Hotel as headquarters. A Clinical Program of unusual interest is being arranged.

Address all correspondence to W. M. RANDALL, *Secretary,* Louisville, Ky.

The next annual meeting of THE ALUMNI SOCIETY OF THE DEWEY SCHOOL OF ORTHODONTIA will be held on April 25th and 26th, 1921, at the Hotel Ambassador in Atlantic City. The usual high standard of the meetings of this society will be maintained. Clinics and evening sessions will be included in the program. All interested in Orthodontia are cordially invited to attend these meetings.

GEORGE F. BURKE, *Secretary,*
741-43 David Whitney Bldg., Detroit, Mich.

The 57th annual meeting of the MASSACHUSETTS DENTAL SOCIETY will be held in Boston, Mass., at the Hotel Somerset, May 4, 5, 6, 1921. A cordial invitation is extended to all members of recognized Dental Societies.

W. VERNON RYDER, *Secretary,*
175 Newbury St., Boston, Mass.

THE DENTAL HYGIENISTS OF NEW YORK STATE will hold an Oral Hygiene Convention in N. Y. City, May 10, 1921, at the Hotel Commodore, coincident with the convention of the State Dental Society. An interesting program has been arranged. Details to be published later. A cordial invitation is extended to anyone interested in Oral Hygiene to attend this convention.

LEONA G. BARISH, *Chairman of Program Committee,*
302 Central Park W., New York City.

The Annual Meeting and Convention of THE NEW JERSEY STATE DENTAL SOCIETY will be held on the Steel Pier, Atlantic City, New Jersey, June 1, 2, 3, 1921. The best thought on modern dental problems will be secured for this meeting by Dr. E. C. Stillwell, Chairman of the Essay Committee.

Dr. Charles Faupel, of 484 Bergen Avenue, Jersey City, N. J., as Chairman of the Exhibit Committee, is arranging with representative firms for an unusual display. Members of the profession will be cordially welcomed. For a list of hotels and general information, address

F. K. HEAZELTON, *Secretary,*
223 East Hanover Street, Trenton, New Jersey.

The annual meeting of THE MAINE DENTAL SOCIETY will be held at Bar Harbor, Maine, on June 21st, 22d and 23d, 1921.

B. C. GRAFFAM, *Secretary.*

THE DENTAL COMMISSIONERS OF CONNECTICUT will meet at Hartford, Connecticut, June 23, 24, and 25, 1921, to examine applicants for license to practise dentistry, to examine dental hygienists for license to practise, and to transact any other business proper to come before them. For further information address

ROBERT H. W. STRANG, *Recorder,*
886 Main St., Bridgeport, Conn.

The next meeting of the VERMONT BOARD OF DENTAL EXAMINERS for the examination of candidates to practise in Vermont, will be held at the State House, Montpelier, June 27, 28, 29, 1921. Candidates will present for registration and preliminaries at ten A. M., Monday the 27th.

To be eligible for examination a candidate must be (1), twenty-one years of age; (2), a graduate of a high school of the first class; (3), a graduate of a reputable dental college. Applications must be in the hands of the Secretary not later than June 20th.

For further information and application blank, address

HARRY F. HAMILTON, *Secretary,*
Newport, Vermont.